Pennoni
PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS

LBGI 1001 February 15, 2010

REPORT OF LAND SURVEY AND ASSOCIATED SURVEY CONTROL

RE: SURVEY OF THE BOUND BROOK, MIDDLESEX COUNTY, NEW JERSEY

THE CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE

(CDE-OU4Q-REQ 01)

PREPARED FOR: THE LOUIS BERGER GROUP, INC.

Pennoni Associates Inc. (PAI) was contracted by The Louis Berger Group, Inc., (LBG), on October 18, 2010 to provide professional land surveying services to LBG and to provide them with the necessary Survey Control points and layout for subsequent studies and analysis of the environmental conditions of the Bound Brook. Field surveying began immediately thereafter. Our primary professional obligations were to: 1-Establish general mobilization /survey control. 2- Establish transect control points at approximate 500' intervals, on both sides of the Bound Brook for its entire 7.5 mile length. 3- Prepare topographic cross sections of the Bound Brook at 1000' intervals for its entire 7.5 mile length. 4- Prepare a plan of survey and report of our efforts. This survey was conducted under the immediate direction and supervision of Dennis S. DiBlasio -Project Principal, NJ P.L.S. GS 02380700 and coordinated with Louis Berger's project representative, Dr. Amy Marie AccardiDey. Additional PAI survey personnel are: Donald Lance-Senior Surveyor, P.L.S., James Pollock / Jeff Weber-Field chief of survey parties, and Joseph Zito-cad technician.

The survey area begins at the confluence of the Bound Brook with the Green Brook (40 deg-35'- 03" N / 074 deg- 30'-07"W) and extends upstream 7.5 miles (40deg-33'-51"N / 074deg-24'-02"W). This survey area includes the Boroughs of Middlesex, Piscataway, and South Plainfield, NJ.

The primary survey control network was established by using survey grade GPS equipment in the Static Mission. The GPS equipment used for this process was **LEICA 1200** "Smart Rovers" tied to 5 published National Geodetic Survey (NGS) survey control monuments of 1st class or higher. These monuments were:

1. PID AG9916-NJ/MIDDLESEX
2. PID KV6524-NJ/SOMERSET
3. PID KV6616-NJ/UNION
4. PID KV6805-NJ MIDDLESEX
5. PID 6826-NJ/UNION

A listing of these NGS control monuments is attached as "The NGS Data Sheet"
The results of the processed comparative survey are shown on the attached "Results-Baseline" and "Loops and Misclosures". These results note accuracy ranges from 1:2,930.544 (high) to 1:608,640 (low).

Our data as submitted are relative to the North American Datum of 1983, (NAD 83), and the North American Vertical Datum of 1988, (NAVD 88). Final horizontal values are shown in New Jersey State Plane Coordinates System, (NJSPCS).

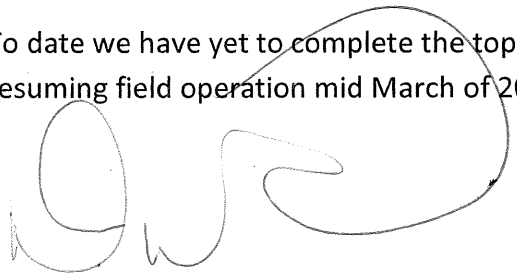
Upon completion of this primary survey control process 10 secondary "site specific" survey control points were established to be used for all subsequent surveying for this project. These points are shown on our Plan of Survey sheets 1 through 4.

Survey "Transect Markers" were set along the Bound Brook on both sides of the banks at approximately 500' intervals. These markers are constructed of 6' x 1-1/2"x ¼" solid fiberglass, orange in color. These markers are identified by a PAI point No., NJSPCS Northing/ Easting, NAVD 88 Ground elevation and Transect No. The markers were set in the field by tying them to the secondary "site specific" survey control utilizing **Topcon Robotic Total Stations**, 03", (3 seconds of arc), model no **GPT 8200**. Data collection utilized integrated **TDS Ranger** data collectors. Horizontal and vertical angles were measured to the nearest 03" of arc and horizontal distances were measured to the nearest 0.01'.

All field work began from one secondary survey control point and tied to a minimum of 1 other secondary control point. These results were checked to assure horizontal and vertical precision. Our field effort for this portion of the project concluded on or about December 01, 2010.

A "Plan of Survey" dated 12/01/2010, job no. LBGI 1001, sheets S0301 through S0304 was prepared detailing the referenced field events. This plan was prepared in an AutoCAD version 2009 format.

To date we have yet to complete the topographic cross sections for this project. We anticipate resuming field operation mid March of 2011 +/-.



Dennis S. DiBlasio, NJ PLS GS 02830700
Associate Vice President

NGS Data Sheets

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

DATABASE = , PROGRAM = datasheet, VERSION = 7.85

1 National Geodetic Survey, Retrieval Date = OCTOBER 27, 2010

AG9916 **********

AG9916 CBN - This is a Cooperative Base Network Control Station.
AG9916 DESIGNATION - 12 W 3
AG9916 PID - AG9916
AG9916 STATE/COUNTY- NJ/MIDDLESEX
AG9916 USGS QUAD - PLAINFIELD (1995)
AG9916
AG9916 *CURRENT SURVEY CONTROL
AG9916
AG9916* NAD 83(2007)- 40 33 26.21313(N) 074 26 46.04499(W) ADJUSTED
AG9916* NAVD 88 - 25.191 (meters) 82.65 (feet) ADJUSTED
AG9916
AG9916 EPOCH DATE - 2002.00
AG9916 X - 1,301,223.091 (meters) COMP
AG9916 Y - -4,674,983.910 (meters) COMP
AG9916 Z - 4,125,189.565 (meters) COMP
AG9916 LAPLACE CORR- 5.05 (seconds) DEFLEC09
AG9916 ELLIP HEIGHT- -7.771 (meters) (02/10/07) ADJUSTED
AG9916 GEOID HEIGHT- -32.96 (meters) GEOID09
AG9916 DYNAMIC HT - 25.180 (meters) 82.61 (feet) COMP
AG9916
AG9916 -------- Accuracy Estimates (at 95% Confidence Level in cm) --------
AG9916 Type PID Designation North East Ellip
AG9916
AG9916 NETWORK AG9916 12 W 3 0.31 0.24 0.84
AG9916
AG9916 MODELED GRAV- 980,192.6 (mgal) NAVD 88
AG9916
AG9916 VERT ORDER - FIRST CLASS II
AG9916
AG9916.The horizontal coordinates were established by GPS observations
AG9916.and adjusted by the National Geodetic Survey in February 2007.
AG9916
AG9916.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
AG9916.See National Readjustment for more information.
AG9916.The horizontal coordinates are valid at the epoch date displayed above.
AG9916.The epoch date for horizontal control is a decimal equivalence
AG9916.of Year/Month/Day.
AG9916
AG9916.The orthometric height was determined by differential leveling and
AG9916.adjusted in March 2001.
AG9916.No vertical observational check was made to the station.
AG9916
AG9916.Photographs are available for this station.
AG9916
AG9916.The X, Y, and Z were computed from the position and the ellipsoidal ht.
AG9916
AG9916.The Laplace correction was computed from DEFLEC09 derived deflections.
AG9916
AG9916.The ellipsoidal height was determined by GPS observations
AG9916.and is referenced to NAD 83.

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AG9916
AG9916.The geoid height was determined by GEOID09.
AG9916
AG9916.The dynamic height is computed by dividing the NAVD 88
AG9916.geopotential number by the normal gravity value computed on the
AG9916.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AG9916.degrees latitude (g = 980.6199 gals.).
AG9916
AG9916.The modeled gravity was interpolated from observed gravity values.
AG9916
AG9916;                    North         East      Units Scale Factor Converg.
AG9916;SPC NJ       -   191,390.141   154,562.638   MT  0.99990026   +0 02 06.1
AG9916;SPC NJ       -   627,919.15    507,094.25    sFT 0.99990026   +0 02 06.1
AG9916;UTM  18      - 4,489,760.366   546,892.255   MT  0.99962707   +0 21 36.5
AG9916
AG9916!             -  Elev Factor  x  Scale Factor =   Combined Factor
AG9916!SPC NJ       -   1.00000122  x   0.99990026  =   0.99990148
AG9916!UTM  18      -   1.00000122  x   0.99962707  =   0.99962829
AG9916
AG9916                          SUPERSEDED SURVEY CONTROL
AG9916
AG9916  ELLIP H (09/24/01)   -7.779  (m)                          GP(      ) 4 1
AG9916  NAD 83(1996)-  40 33 26.21328(N)    074 26 46.04552(W) AD(      ) B
AG9916  ELLIP H (08/14/98)   -7.763  (m)                          GP(      ) 3 2
AG9916  NAVD 88 (09/24/01)   25.19   (m)           82.6     (f) LEVELING    3
AG9916  NAVD 88 (08/14/98)   25.19   (m)           82.6     (f) LEVELING    3
AG9916
AG9916.Superseded values are not recommended for survey control.
AG9916.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AG9916.See file dsdata.txt to determine how the superseded data were derived.
AG9916
AG9916_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TWK4689289760(NAD 83)
AG9916_MARKER: F = FLANGE-ENCASED ROD
AG9916_SETTING: 15 = METAL ROD DRIVEN INTO GROUND. SEE TEXT FOR ADDITIONAL
AG9916+WITH SETTING: INFORMATION.
AG9916_STAMPING: 12 W 3 1997
AG9916_MARK LOGO: NJGS
AG9916_PROJECTION: RECESSED 10 CENTIMETERS
AG9916_MAGNETIC: N = NO MAGNETIC MATERIAL
AG9916_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY
AG9916_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AG9916+SATELLITE: SATELLITE OBSERVATIONS - July 31, 2008
AG9916_ROD/PIPE-DEPTH: 1.52 meters
AG9916_SLEEVE-DEPTH  : 0.90 meters
AG9916
AG9916  HISTORY     - Date     Condition        Report By
AG9916  HISTORY     - 1997     MONUMENTED       NJGS
AG9916  HISTORY     - 19970707 GOOD             NJGS
AG9916  HISTORY     - 20001003 GOOD             NJGS
AG9916  HISTORY     - 20001212 GOOD             TWT
AG9916  HISTORY     - 20020717 GOOD             NJGS
AG9916  HISTORY     - 20030403 GOOD             JCLS
AG9916  HISTORY     - 20050404 GOOD             JCLS
AG9916  HISTORY     - 20050405 GOOD             JCLS
AG9916  HISTORY     - 20050411 GOOD             NJGS
AG9916  HISTORY     - 20050816 GOOD             B2A
AG9916  HISTORY     - 20060508 GOOD             BOSWEL
AG9916  HISTORY     - 20080731 GOOD             INDIV
AG9916
AG9916                          STATION DESCRIPTION
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AG9916
AG9916'DESCRIBED BY NEW JERSEY GEODETIC SURVEY 1997 (RJK)
AG9916'THE STATION IS LOCATED IN PISCATAWAY TOWNSHIP ON STATE PROPERTY ABOUT
AG9916'2.5 MI (4.0 KM) SOUTHEAST FROM THE BOROUGH OF DUNELLEN, 4.0 MI (6.4
AG9916'KM) NORTHWEST FROM THE BOROUGH OF METUCHEN AND 2.5 MI (4.0 KM)
AG9916'SOUTHWEST FROM THE BOROUGH OF SOUTH PLAINFIELD ON THE NORTHWEST SIDE
AG9916'OF A LARGE TRIANGULAR SHAPED DRAINAGE DETENTION BASIN WITHIN A RAMP
AG9916'AREA AND ACCESS ROAD LEADING TO THE NORTHBOUND LANES OF INTERSTATE
AG9916'HIGHWAY 287 AND ABOUT 0.1 MI (0.2 KM) NORTH FROM THE BRIDGE CARRYING
AG9916'WASHINGTON AVENUE OVER INTERSTATE HIGHWAY 287. TO REACH THE STATION
AG9916'FROM THE INTERSECTION OF STELTON ROAD, COUNTY ROAD 529 AND WASHINGTON
AG9916'AVENUE, GO SOUTH ON WASHINGTON AVENUE FOR 0.2 MI (0.3 KM) TO THE
AG9916'INTERSECTION WITH THE RAMP AND AN ACCESS ROAD AT A TRAFFIC LIGHT. TURN
AG9916'LEFT AND GO EAST ON THE ACCESS ROAD FOR ABOUT 87 FT (26.5 M) TO THE
AG9916'STATION ON THE RIGHT, SET FLUSH WITH THE GROUND ON THE NORTHWEST SIDE
AG9916'OF A LARGE TRIANGULAR SHAPED DRAINAGE RETENTION BASIN WITHIN A RAMP
AG9916'LEADING TO THE NORTHBOUND LANES OF INTERSTATE HIGHWAY 287 AND AN
AG9916'ACCESS ROAD LEADING EAST TO A LARGE CONCRETE AND GLASS OFFICE
AG9916'BUILDING, THE WASHINGTON PLAZA. THE STATION IS A STANDARD NGS THREE
AG9916'DIMENSIONAL MARK. THE LOGO FLANGE WITH ACCESS COVER IS STAMPED 12 W 3
AG9916'1997 AND IS SET FLUSH WITH THE GROUND. THE STATION IS A NINE
AG9916'SIXTEENTHS INCH DIAMETER STAINLESS STEEL ROD WITH GREASE FILLED
AG9916'SLEEVE, DRIVEN TO REFUSAL AT A DEPTH OF 1.52 M (4.99 FT) AND IS
AG9916'RECESSED ABOUT 10 CM BELOW THE GROUND. THE STATION IS 33.0 FT (10.1
AG9916'M) SOUTH SOUTHEAST FROM THE CENTERLINE OF A PAVED ACCESS ROAD LEADING
AG9916'EAST TO A LARGE CONCRETE AND GLASS OFFICE BUILDING, 59.75 FT (18.21 M)
AG9916'WEST FROM A CONCRETE FLARED END SECTION DRAINAGE PIPE ON THE WEST SIDE
AG9916'OF THE RAMP, 61.30 FT (18.68 M) EAST NORTHEAST FROM A CONCRETE FLARED
AG9916'END SECTION DRAINAGE PIPE ON THE EAST SIDE OF WASHINGTON AVENUE, 78.50
AG9916'FT (23.93 M) SOUTHEAST FROM POLE NUMBER 9771 PC ON THE NORTHWEST SIDE
AG9916'OF THE ACCESS ROAD, 81.50 FT (24.84 M) EAST FROM A TRAFFIC LIGHT POLE
AG9916'ON THE EAST SIDE OF WASHINGTON AVENUE, 87.0 FT (26.5 M) EAST FROM THE
AG9916'EAST CURB OF WASHINGTON AVENUE AND 12.50 FT (3.81 M) SOUTH SOUTHEAST
AG9916'FROM THE SOUTH CURB OF THE ACCESS ROAD.
AG9916
AG9916 STATION RECOVERY (1997)
AG9916
AG9916'RECOVERY NOTE BY NEW JERSEY GEODETIC SURVEY 1997 (ECB)
AG9916'THE STATION IS LOCATED IN PISCATAWAY TOWNSHIP ON STATE PROPERTY ABOUT
AG9916'2.5 MI (4.0 KM) SOUTHEAST FROM THE BOROUGH OF DUNELLEN, 4.0 MI (6.4
AG9916'KM) NORTHWEST FROM THE BOROUGH OF METUCHEN AND 2.5 MI (4.0 KM)
AG9916'SOUTHWEST FROM THE BOROUGH OF SOUTH PLAINFIELD ON THE NORTHWEST SIDE
AG9916'OF A LARGE TRIANGULAR SHAPED DRAINAGE DETENTION BASIN WITHIN A RAMP
AG9916'AREA AND ACCESS ROAD LEADING TO THE NORTHBOUND LANES OF INTERSTATE
AG9916'HIGHWAY 287 AND ABOUT 0.1 MI (0.2 KM) NORTH FROM THE BRIDGE CARRYING
AG9916'WASHINGTON AVENUE OVER INTERSTATE HIGHWAY 287. TO REACH THE STATION
AG9916'FROM THE INTERSECTION OF STELTON ROAD, COUNTY ROAD 529 AND WASHINGTON
AG9916'AVENUE, GO SOUTH ON WASHINGTON AVENUE FOR 0.2 MI (0.3 KM) TO THE
AG9916'INTERSECTION WITH THE RAMP AND AN ACCESS ROAD AT A TRAFFIC LIGHT. TURN
AG9916'LEFT AND GO EAST ON THE ACCESS ROAD FOR ABOUT 87 FT (26.5 M) TO THE
AG9916'STATION ON THE RIGHT, SET FLUSH WITH THE GROUND ON THE NORTHWEST SIDE
AG9916'OF A LARGE TRIANGULAR SHAPED DRAINAGE RETENTION BASIN WITHIN A RAMP
AG9916'LEADING TO THE NORTHBOUND LANES OF INTERSTATE HIGHWAY 287 AND AN
AG9916'ACCESS ROAD LEADING EAST TO A LARGE CONCRETE AND GLASS OFFICE
AG9916'BUILDING, THE WASHINGTON PLAZA. THE STATION IS A STANDARD NGS THREE
AG9916'DIMENSIONAL MARK. THE LOGO FLANGE WITH ACCESS COVER IS STAMPED 12 W 3
AG9916'1997 AND IS SET FLUSH WITH THE GROUND. THE STATION IS A NINE
AG9916'SIXTEENTHS INCH DIAMETER STAINLESS STEEL ROD WITH GREASE FILLED
AG9916'SLEEVE, DRIVEN TO REFUSAL AT A DEPTH OF 1.52 M (4.99 FT) AND IS
AG9916'RECESSED ABOUT 10 CM BELOW THE GROUND. THE STATION IS 33.0 FT (10.1

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AG9916'M) SOUTH SOUTHEAST FROM THE CENTERLINE OF A PAVED ACCESS ROAD LEADING
AG9916'EAST TO A LARGE CONCRETE AND GLASS OFFICE BUILDING, 59.75 FT (18.21 M)
AG9916'WEST FROM A CONCRETE FLARED END SECTION DRAINAGE PIPE ON THE WEST SIDE
AG9916'OF THE RAMP, 61.30 FT (18.68 M) EAST NORTHEAST FROM A CONCRETE FLARED
AG9916'END SECTION DRAINAGE PIPE ON THE EAST SIDE OF WASHINGTON AVENUE, 78.50
AG9916'FT (23.93 M) SOUTHEAST FROM POLE NUMBER 9771 PC ON THE NORTHWEST SIDE
AG9916'OF THE ACCESS ROAD, 81.50 FT (24.84 M) EAST FROM A TRAFFIC LIGHT POLE
AG9916'ON THE EAST SIDE OF WASHINGTON AVENUE, 87.0 FT (26.5 M) EAST FROM THE
AG9916'EAST CURB OF WASHINGTON AVENUE AND 12.50 FT (3.81 M) SOUTH SOUTHEAST
AG9916'FROM THE SOUTH CURB OF THE ACCESS ROAD.
AG9916
AG9916                          STATION RECOVERY (2000)
AG9916
AG9916'RECOVERY NOTE BY NEW JERSEY GEODETIC SURVEY 2000 (FGK)
AG9916'RECOVERED AS DESCRIBED.  ROD IS STAINLESS STEEL.
AG9916'
AG9916'
AG9916'
AG9916
AG9916                          STATION RECOVERY (2000)
AG9916
AG9916'RECOVERY NOTE BY TWT CONS ENG 2000 (DRF)
AG9916'RECOVERED IN GOOD CONDITION.
AG9916
AG9916                          STATION RECOVERY (2002)
AG9916
AG9916'RECOVERY NOTE BY NEW JERSEY GEODETIC SURVEY 2002 (EB)
AG9916'RECOVERED AS DESCRIBED.
AG9916'
AG9916'
AG9916
AG9916                          STATION RECOVERY (2003)
AG9916
AG9916'RECOVERY NOTE BY JOHN CHANCE LAND SURVEYS INC 2003
AG9916'RECOVERED IN GOOD CONDITION.
AG9916
AG9916                          STATION RECOVERY (2005)
AG9916
AG9916'RECOVERY NOTE BY JOHN CHANCE LAND SURVEYS INC 2005
AG9916'RECOVERED IN GOOD CONDITION.
AG9916
AG9916                          STATION RECOVERY (2005)
AG9916
AG9916'RECOVERY NOTE BY JOHN CHANCE LAND SURVEYS INC 2005 (MRY)
AG9916'RECOVERED IN GOOD CONDITION.
AG9916
AG9916                          STATION RECOVERY (2005)
AG9916
AG9916'RECOVERY NOTE BY NEW JERSEY GEODETIC SURVEY 2005 (SJM)
AG9916'RECOVERED AS DESCRIBED.
AG9916
AG9916                          STATION RECOVERY (2005)
AG9916
AG9916'RECOVERY NOTE BY B2A CONSULTANTS 2005 (ARD)
AG9916'RECOVERED AS DESCRIBED. (ARD)
AG9916
AG9916                          STATION RECOVERY (2006)
AG9916
AG9916'RECOVERY NOTE BY BOSWELL ENGINEERING 2006 (AB)
AG9916'RECOVERED IN GOOD CONDITION.
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AG9916
AG9916                              STATION RECOVERY (2008)
AG9916
AG9916'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2008 (GLB)
AG9916'THE MONUMENT WAS RECOVERED IN GOOD CONDITION.  SUBMITED BY GREG BURKE
AG9916'FROM ATLANTIS AERIAL SURVEY CO.

*** retrieval complete.
Elapsed Time = 00:00:00
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The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

DATABASE = , PROGRAM = datasheet, VERSION = 7.85

1 National Geodetic Survey, Retrieval Date = OCTOBER 27, 2010

KV6524 **********

KV6524 DESIGNATION - 27731

KV6524 PID - KV6524

KV6524 STATE/COUNTY- NJ/SOMERSET

KV6524 USGS QUAD - BOUND BROOK (1995)

KV6524

KV6524 *CURRENT SURVEY CONTROL

KV6524

KV6524* NAD 83(2007)- 40 35 06.08627(N) 074 30 29.41845(W) ADJUSTED

KV6524* NAVD 88 - 13.8 (meters) 45. (feet) VERTCON

KV6524

KV6524 EPOCH DATE - 2002.00

KV6524 X - 1,295,622.058 (meters) COMP

KV6524 Y - -4,674,451.012 (meters) COMP

KV6524 Z - 4,127,522.134 (meters) COMP

KV6524 LAPLACE CORR- 4.08 (seconds) DEFLEC09

KV6524 ELLIP HEIGHT- -19.321 (meters) (02/10/07) ADJUSTED

KV6524 GEOID HEIGHT- -33.10 (meters) GEOID09

KV6524

KV6524 ------- Accuracy Estimates (at 95% Confidence Level in cm) --------

KV6524 Type PID Designation North East Ellip

KV6524 ----------

KV6524 NETWORK KV6524 27731 0.71 0.57 1.72

KV6524 ----------

KV6524

KV6524.The horizontal coordinates were established by GPS observations

KV6524.and adjusted by the National Geodetic Survey in February 2007.

KV6524

KV6524.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).

KV6524.See National Readjustment for more information.

KV6524.The horizontal coordinates are valid at the epoch date displayed above.

KV6524.The epoch date for horizontal control is a decimal equivalence

KV6524.of Year/Month/Day.

KV6524

KV6524.The NAVD 88 height was computed by applying the VERTCON shift value to

KV6524.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)

KV6524

KV6524.The X, Y, and Z were computed from the position and the ellipsoidal ht.

KV6524

KV6524.The Laplace correction was computed from DEFLEC09 derived deflections.

KV6524

KV6524.The ellipsoidal height was determined by GPS observations

KV6524.and is referenced to NAD 83.

KV6524

KV6524.The geoid height was determined by GEOID09.

KV6524

		North	East	Units	Scale Factor	Converg.
KV6524;SPC NJ	-	194,469.158	149,308.240	MT	0.99990001	-0 00 19.1
KV6524;SPC NJ	-	638,020.90	489,855.45	sFT	0.99990001	-0 00 19.1
KV6524;UTM 18	-	4,492,808.669	541,621.921	MT	0.99962132	+0 19 11.9

KV6524

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KV6524!                 -  Elev Factor  x  Scale Factor =   Combined Factor
KV6524!SPC NJ           -   1.00000303  x   0.99990001  =   0.99990304
KV6524!UTM  18          -   1.00000303  x   0.99962132  =   0.99962435
KV6524
KV6524                              SUPERSEDED SURVEY CONTROL
KV6524
KV6524  ELLIP H (10/23/02)  -19.319  (m)                          GP(      ) 4 1
KV6524  NAD 83(1996)-  40 35 06.08649(N)    074 30 29.41863(W) AD(      ) 2
KV6524  ELLIP H (05/14/99)  -19.313  (m)                          GP(      ) 4 1
KV6524  NAD 83(1986)-  40 35 06.08718(N)    074 30 29.42073(W) AD(      ) 2
KV6524  NGVD 29 (10/04/91)   14.1    (m)           46.     (f) GPS OBS
KV6524
KV6524.Superseded values are not recommended for survey control.
KV6524.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
KV6524.See file dsdata.txt to determine how the superseded data were derived.
KV6524
KV6524_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TWK4162192808(NAD 83)
KV6524_MARKER: DD = SURVEY DISK
KV6524_SETTING: 38 = SET IN THE ABUTMENT OR PIER OF A LARGE BRIDGE
KV6524_SP_SET: BRIDGE ABUTMENT
KV6524_STAMPING: 27731
KV6524_MARK LOGO: NJGS
KV6524_MAGNETIC: N = NO MAGNETIC MATERIAL
KV6524_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
KV6524_SATELLITE: THE SITE LOCATION WAS REPORTED AS NOT SUITABLE FOR
KV6524+SATELLITE: SATELLITE OBSERVATIONS - May 03, 2009
KV6524
KV6524  HISTORY     - Date     Condition        Report By
KV6524  HISTORY     - 1982     MONUMENTED       NJGS
KV6524  HISTORY     - 19900124 GOOD             NJGS
KV6524  HISTORY     - 20050706 GOOD             INDIV
KV6524  HISTORY     - 20090503 GOOD             GEOCAC
KV6524
KV6524                              STATION DESCRIPTION
KV6524
KV6524'DESCRIBED BY NEW JERSEY GEODETIC SURVEY 1990
KV6524'THE STATION IS LOCATED IN GREEN BROOK TOWNSHIP, ON THE SOUTHWEST SIDE
KV6524'OF SERBINGS MILLS ROAD, IN THE NORTHWEST CORNER OF THE NORTH ABUTMENT
KV6524'OF THE BRIDGE OVER GREEN BROOK, THE SOMERSET, MIDDLESEX COUNTY LINE.
KV6524'TO REACH THE STATION FROM THE JUNCTION OF COUNTY ROAD 527, MOUNTAIN
KV6524'AVENUE, AND U.S. HIGHWAY 22 AT THE NORTHEAST CORNER OF BOUND BROOK
KV6524'BOROUGH, GO 1.6 KM (0.99 MI) NORTHEAST ON ROUTE 22 TO THE JUGHANDLE
KV6524'EXIT ONTO SERBINGS MILLS GREEN BROOK ROAD, TURN RIGHT AND GO 0.16 KM
KV6524'(0.10 MI) SOUTHEAST TO THE BRIDGE OVER GREEN BROOK AND THE STATION ON
KV6524'THE RIGHT.  IT IS 0.5 M (1.64 FT) WEST NORTHWEST OF THE NORTH END OF
KV6524'THE CONCRETE BRIDGE BALUSTRADE, 1.4 M (4.59 FT) SOUTH OF POLE 61540,
KV6524'2.4 M (7.87 FT) NORTHWEST OF THE CURBLINE AND 7.3 M (23.95 FT)
KV6524'NORTHWEST OF CENTERLINE OF THE ROAD.  THE STATION IS FLUSH WITH THE
KV6524'CONCRETE.
KV6524
KV6524                              STATION RECOVERY (2005)
KV6524
KV6524'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2005 (LUD)
KV6524'RECOVERED IN GOOD CONDITION.
KV6524
KV6524                              STATION RECOVERY (2009)
KV6524
KV6524'RECOVERY NOTE BY GEOCACHING 2009 (PR)
KV6524'RECOVERED IN GOOD CONDITION.
```

```
*** retrieval complete.
Elapsed Time = 00:00:00
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

DATABASE = , PROGRAM = datasheet, VERSION = 7.85

1 National Geodetic Survey, Retrieval Date = OCTOBER 27, 2010

KV6616 **********

KV6616 DESIGNATION - SC 200

KV6616 PID - KV6616

KV6616 STATE/COUNTY- NJ/UNION

KV6616 USGS QUAD - PLAINFIELD (1995)

KV6616

KV6616 *CURRENT SURVEY CONTROL

KV6616 ---

KV6616* NAD 83(2007)- 40 35 55.60855(N) 074 27 17.22828(W) ADJUSTED

KV6616* NAVD 88 - 18.6 (meters) 61. (feet) GPS OBS

KV6616 ---

KV6616 EPOCH DATE - 2002.00

KV6616 X - 1,299,711.608 (meters) COMP

KV6616 Y - -4,672,287.791 (meters) COMP

KV6616 Z - 4,128,685.313 (meters) COMP

KV6616 LAPLACE CORR- 4.11 (seconds) DEFLEC09

KV6616 ELLIP HEIGHT- -14.401 (meters) (02/10/07) ADJUSTED

KV6616 GEOID HEIGHT- -32.99 (meters) GEOID09

KV6616

KV6616 -------- Accuracy Estimates (at 95% Confidence Level in cm) --------

KV6616 Type PID Designation North East Ellip

KV6616 ---

KV6616 NETWORK KV6616 SC 200 1.14 0.78 2.61

KV6616 ---

KV6616

KV6616.The horizontal coordinates were established by GPS observations

KV6616.and adjusted by the National Geodetic Survey in February 2007.

KV6616

KV6616.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).

KV6616.See National Readjustment for more information.

KV6616.The horizontal coordinates are valid at the epoch date displayed above.

KV6616.The epoch date for horizontal control is a decimal equivalence

KV6616.of Year/Month/Day.

KV6616

KV6616.The orthometric height was determined by GPS observations and a

KV6616.high-resolution geoid model.

KV6616

KV6616.The X, Y, and Z were computed from the position and the ellipsoidal ht.

KV6616

KV6616.The Laplace correction was computed from DEFLEC09 derived deflections.

KV6616

KV6616.The ellipsoidal height was determined by GPS observations

KV6616.and is referenced to NAD 83.

KV6616

KV6616.The geoid height was determined by GEOID09.

KV6616

KV6616;		North	East	Units	Scale Factor	Converg.
KV6616;SPC NJ	-	195,997.525	153,826.711	MT	0.99990018	+0 01 45.9
KV6616;SPC NJ	-	643,035.21	504,679.80	sFT	0.99990018	+0 01 45.9
KV6616;UTM 18	-	4,494,362.240	546,130.394	MT	0.99962619	+0 21 17.3

KV6616

```
KV6616!                 -  Elev Factor  x  Scale Factor =   Combined Factor
KV6616!SPC NJ           -   1.00000226  x   0.99990018  =   0.99990244
KV6616!UTM  18          -   1.00000226  x   0.99962619  =   0.99962845
KV6616
KV6616:                    Primary Azimuth Mark                    Grid Az
KV6616:SPC NJ           -  SC 201                                  331 37 28.6
KV6616:UTM  18          -  SC 201                                  331 17 57.2
KV6616
KV6616|-----------------------------------------------------------------------|
KV6616| PID    Reference Object                          Distance      Geod. Az |
KV6616|                                                                dddmmss.s |
KV6616| KV6617 SC 201                                 455.620 METERS 3313914.5 |
KV6616|-----------------------------------------------------------------------|
KV6616
KV6616                              SUPERSEDED SURVEY CONTROL
KV6616
KV6616  ELLIP H (10/23/02)  -14.405  (m)                          GP(      ) 4 1
KV6616  NAD 83(1996)-  40 35 55.60877(N)    074 27 17.22852(W) AD(      ) 2
KV6616  ELLIP H (05/14/99)  -14.393  (m)                          GP(      ) 4 1
KV6616  NAD 83(1996)-  40 35 55.60827(N)    074 27 17.22922(W) AD(      ) 2
KV6616  NAD 83(1986)-  40 35 55.60874(N)    074 27 17.23038(W) AD(      ) 2
KV6616  NGVD 29 (10/04/91)   18.9    (m)          62.      (f) GPS OBS
KV6616
KV6616.Superseded values are not recommended for survey control.
KV6616.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
KV6616.See file dsdata.txt to determine how the superseded data were derived.
KV6616
KV6616_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TWK4613094362(NAD 83)
KV6616_MARKER: DD = SURVEY DISK
KV6616_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
KV6616_SP_SET: CONCRETE POST
KV6616_STAMPING: 200
KV6616_MARK LOGO: NJ-035
KV6616_PROJECTION: FLUSH
KV6616_MAGNETIC: N = NO MAGNETIC MATERIAL
KV6616_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
KV6616+STABILITY: SURFACE MOTION
KV6616_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
KV6616+SATELLITE: SATELLITE OBSERVATIONS - August 04, 2005
KV6616
KV6616  HISTORY      - Date      Condition         Report By
KV6616  HISTORY      - 1990      MONUMENTED        NJ-035
KV6616  HISTORY      - 20050804  GOOD              B2A
KV6616
KV6616                              STATION DESCRIPTION
KV6616
KV6616'DESCRIBED BY SOMERSET COUNTY NEW JERSEY 1990
KV6616'THE STATION IS LOCATED IN SOUTH PLAINFIELD BOROUGH, ON THE SOUTHWEST
KV6616'SIDE OF ROCK AVENUE.  TO REACH THE STATION FROM THE JUNCTION OF U.S.
KV6616'HIGHWAY 22 AND ROCK AVENUE, IN THE SOUTHWEST CORNER OF NORTH
KV6616'PLAINFIELD BOROUGH, GREEN BROOK TOWNSHIP, SOMERSET COUNTY, GO 1.44 KM
KV6616'(0.89 MI) SOUTHEAST ON ROCK AVENUE, CROSSING GREEN BROOK INTO SOUTH
KV6616'PLAINFIELD BOROUGH, TO A FACTORY DRIVEWAY, JUST SOUTHEAST OF MYRTLE
KV6616'AVENUE, AND THE STATION ON THE RIGHT.  TO REACH THE STATION FROM THE
KV6616'JUNCTION OF ROCK AVENUE AND WEST FRONT STREET, STATE ROUTE 28, IN
KV6616'SOUTH PLAINFIELD BOROUGH, GO 0.16 KM (0.10 MI) NORTHWEST ON ROCK
KV6616'AVENUE TO THE FACTORY DRIVE AND THE STATION ON THE LEFT.  IT IS 20.1
KV6616'M (65.94 FT) SOUTH SOUTHEAST OF UTILITY POLE 5082 PF, 5.3 M
KV6616'(17.39 FT) WEST SOUTHWEST OF THE ROCK AVENUE CENTERLINE, 3.1 M
KV6616'(10.17 FT) WEST NORTHWEST OF A GAS VALVE COVER IN ROCK AVENUE, 1.0 M
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KV6616'(3.28 FT) WEST SOUTHWEST OF THE ROCK AVENUE CURBLINE AND 7.3 M
KV6616'(23.95 FT) SOUTH SOUTHEAST OF THE DRIVEWAY. THE STATION IS .05 M
KV6616'(0.16 FT) BELOW THE GROUND.  DESCRIPTION BY NJGS SRB.
KV6616
KV6616                              STATION RECOVERY (2005)
KV6616
KV6616'RECOVERY NOTE BY B2A CONSULTANTS 2005 (ARD)
KV6616'RECOVERED AS DESCRIBED.  (ARD)

*** retrieval complete.
Elapsed Time = 00:00:00
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The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
DATABASE =  , PROGRAM = datasheet, VERSION = 7.85
1        National Geodetic Survey,   Retrieval Date = OCTOBER 27, 2010
KV6805 ***********************************************************************
KV6805  DESIGNATION -  12 N 3
KV6805  PID         -  KV6805
KV6805  STATE/COUNTY-  NJ/MIDDLESEX
KV6805  USGS QUAD   -  PERTH AMBOY (1981)
KV6805
KV6805                          *CURRENT SURVEY CONTROL
KV6805  ______________________________________________________________________
KV6805* NAD 83(2007)-  40 35 04.92622(N)     074 21 17.72315(W)      ADJUSTED
KV6805* NAVD 88     -         43.2     (meters)      142.      (feet)  GPS OBS
KV6805  ______________________________________________________________________
KV6805  EPOCH DATE  -         2002.00
KV6805  X           -  1,308,132.506 (meters)                         COMP
KV6805  Y           -  -4,671,013.073 (meters)                        COMP
KV6805  Z           -  4,127,514.311 (meters)                         COMP
KV6805  LAPLACE CORR-          5.22  (seconds)                        DEFLEC09
KV6805  ELLIP HEIGHT-         10.425 (meters)           (02/10/07)  ADJUSTED
KV6805  GEOID HEIGHT-        -32.75  (meters)                         GEOID09
KV6805
KV6805  -------- Accuracy Estimates (at 95% Confidence Level in cm) ---------
KV6805  Type     PID    Designation                          North   East   Ellip
KV6805  ----------------------------------------------------------------------
KV6805  NETWORK KV6805 12 N 3                                 0.27   0.24   0.55
KV6805  ----------------------------------------------------------------------
KV6805
KV6805.The horizontal coordinates were established by GPS observations
KV6805.and adjusted by the National Geodetic Survey in February 2007.
KV6805
KV6805.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
KV6805.See National Readjustment for more information.
KV6805.The horizontal coordinates are valid at the epoch date displayed above.
KV6805.The epoch date for horizontal control is a decimal equivalence
KV6805.of Year/Month/Day.
KV6805
KV6805.The orthometric height was determined by GPS observations and a
KV6805.high-resolution geoid model.
KV6805
KV6805.The X, Y, and Z were computed from the position and the ellipsoidal ht.
KV6805
KV6805.The Laplace correction was computed from DEFLEC09 derived deflections.
KV6805
KV6805.The ellipsoidal height was determined by GPS observations
KV6805.and is referenced to NAD 83.
KV6805
KV6805.The geoid height was determined by GEOID09.
KV6805
KV6805;                    North         East      Units Scale Factor Converg.
KV6805;SPC NJ       -   194,443.461   162,281.138   MT  0.99990186   +0 05 39.8
KV6805;SPC NJ       -   637,936.59    532,417.37    sFT 0.99990186   +0 05 39.8
KV6805;UTM  18      - 4,492,856.613   554,591.227   MT  0.99963668   +0 25 10.8
KV6805
```

```
KV6805!                 -  Elev Factor  x  Scale Factor =   Combined Factor
KV6805!SPC NJ           -   0.99999836  x   0.99990186  =   0.99990022
KV6805!UTM  18          -   0.99999836  x   0.99963668  =   0.99963505
KV6805
KV6805                              SUPERSEDED SURVEY CONTROL
KV6805
KV6805  ELLIP H (10/23/02)    10.423  (m)                          GP(        ) 4 1
KV6805  NAD 83(1996)-  40 35 04.92642(N)     074 21 17.72336(W) AD(        ) 1
KV6805  ELLIP H (05/14/99)    10.430  (m)                          GP(        ) 4 1
KV6805  NAD 83(1996)-  40 35 04.92606(N)     074 21 17.72383(W) AD(        ) 1
KV6805  NAD 83(1992)-  40 35 04.92498(N)     074 21 17.72338(W) AD(        ) 1
KV6805  ELLIP H (04/25/94)    10.366  (m)                          GP(        ) 3 1
KV6805  NAD 83(1986)-  40 35 04.92555(N)     074 21 17.72525(W) AD(        ) 1
KV6805
KV6805.Superseded values are not recommended for survey control.
KV6805.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
KV6805.See file dsdata.txt to determine how the superseded data were derived.
KV6805
KV6805_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TWK5459192856(NAD 83)
KV6805_MARKER: DD = SURVEY DISK
KV6805_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
KV6805_SP_SET: CONCRETE POST
KV6805_STAMPING: 12 N 3 1992
KV6805_MARK LOGO: NJGS
KV6805_MAGNETIC: N = NO MAGNETIC MATERIAL
KV6805_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
KV6805+STABILITY: SURFACE MOTION
KV6805_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
KV6805+SATELLITE: SATELLITE OBSERVATIONS - July 08, 2004
KV6805
KV6805  HISTORY      - Date      Condition        Report By
KV6805  HISTORY      - 1992      MONUMENTED       NJGS
KV6805  HISTORY      - 19930322  GOOD             NJHA
KV6805  HISTORY      - 20040708  GOOD             GEOCAC
KV6805
KV6805                              STATION DESCRIPTION
KV6805
KV6805'DESCRIBED BY NEW JERSEY GEODETIC SURVEY 1992
KV6805'THE STATION IS LOCATED IN EDISON TOWNSHIP ON THE NORTH SIDE OF NEW
KV6805'DOVER ROAD ALONG THE EXIT DRIVEWAY LEADING FROM THE JAMES MADISON
KV6805'PRIMARY SCHOOL NUMBER 20 AND THE JAMES MADISON INTERMEDIATE SCHOOL
KV6805'NUMBER 10 AND BEHIND THE EDISON TOWNSHIP FIRST AID SQUAD NUMBER 2,
KV6805'848 NEW DOVER ROAD.  TO REACH THE STATION FROM THE INTERSECTION OF
KV6805'NEW DOVER ROAD BRIDGE AND THE GARDEN STATE PARKWAY, WHICH IS ABOUT
KV6805'1.0 MI NORTH OF INTERCHANGE 131, GO WEST ON NEW DOVER ROAD FOR 1.5 MI
KV6805'(2.4 KM) TO THE STATION ON THE RIGHT, BEHIND THE ONE STORY GRAY
KV6805'PAINTED BLOCK RESCUE SQUAD BUILDING.  THE STATION IS 0.7 M (2.3 FT)
KV6805'WEST FROM THE WEST CURB OF THE EXIT DRIVE, 0.6 M (2.0 FT) EAST FROM
KV6805'THE EAST EDGE OF THE SIDEWALK, 7.2 M (23.6 FT) EAST FROM THE EAST
KV6805'EDGE OF THE RESCUE SQUAD PARKING LOT, 24.9 M (81.7 FT) NORTHEAST FROM
KV6805'THE NORTHEAST CORNER OF THE RESCUE SQUAD BUILDING AND 28.6 M
KV6805'(93.8 FT) SOUTH FROM THE NORTHEAST CORNER OF THE PARKING LOT.
KV6805
KV6805                              STATION RECOVERY (1993)
KV6805
KV6805'RECOVERY NOTE BY NEW JERSEY HIGHWAY AUTHORITY 1993
KV6805'RECOVERED IN GOOD CONDITION.
KV6805
KV6805                              STATION RECOVERY (2004)
KV6805
```

KV6805'RECOVERY NOTE BY GEOCACHING 2004 (WD)
KV6805'THE SCHOOL DRIVEWAY IS NOW NAMED WEINFELD DRIVE.

*** retrieval complete.
Elapsed Time = 00:00:00

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

DATABASE = , PROGRAM = datasheet, VERSION = 7.85

1 National Geodetic Survey, Retrieval Date = OCTOBER 27, 2010

KV6826 DESIGNATION - 20 G 1
KV6826 PID - KV6826
KV6826 STATE/COUNTY- NJ/UNION
KV6826 USGS QUAD - PERTH AMBOY (1981)
KV6826
KV6826 *CURRENT SURVEY CONTROL
KV6826

KV6826* NAD 83(2007)-	40 36 40.44220(N)	074 22 23.83896(W)			ADJUSTED
KV6826* NAVD 88 -	37.4 (meters)	123. (feet)			GPS OBS
KV6826 EPOCH DATE -	2002.00				
KV6826 X -	1,306,117.552 (meters)				COMP
KV6826 Y -	-4,669,581.467 (meters)				COMP
KV6826 Z -	4,129,747.648 (meters)				COMP
KV6826 LAPLACE CORR-	4.89 (seconds)				DEFLEC09
KV6826 ELLIP HEIGHT-	4.623 (meters)			(02/10/07)	ADJUSTED
KV6826 GEOID HEIGHT-	-32.81 (meters)				GEOID09

KV6826 -------- Accuracy Estimates (at 95% Confidence Level in cm) --------

	Type	PID	Designation	North	East	Ellip
KV6826	NETWORK	KV6826	20 G 1	0.25	0.24	0.55

KV6826

KV6826.The horizontal coordinates were established by GPS observations
KV6826.and adjusted by the National Geodetic Survey in February 2007.
KV6826
KV6826.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
KV6826.See National Readjustment for more information.
KV6826.The horizontal coordinates are valid at the epoch date displayed above.
KV6826.The epoch date for horizontal control is a decimal equivalence
KV6826.of Year/Month/Day.
KV6826
KV6826.The orthometric height was determined by GPS observations and a
KV6826.high-resolution geoid model.
KV6826
KV6826.Photographs are available for this station.
KV6826
KV6826.The X, Y, and Z were computed from the position and the ellipsoidal ht.
KV6826
KV6826.The Laplace correction was computed from DEFLEC09 derived deflections.
KV6826
KV6826.The ellipsoidal height was determined by GPS observations
KV6826.and is referenced to NAD 83.
KV6826
KV6826.The geoid height was determined by GEOID09.
KV6826

KV6826;	North	East	Units	Scale Factor	Converg.	
KV6826;SPC NJ -	197,387.069	160,722.210	MT	0.99990141	+0 04 56.9	
KV6826;SPC NJ -	647,594.08	527,302.78	sFT	0.99990141	+0 04 56.9	

```
KV6826;UTM  18       - 4,495,790.540   553,016.027   MT  0.99963460   +0 24 28.6
KV6826
KV6826!              -  Elev Factor  x  Scale Factor =   Combined Factor
KV6826!SPC NJ        -   0.99999927  x   0.99990141  =   0.99990068
KV6826!UTM  18       -   0.99999927  x   0.99963460  =   0.99963388
KV6826
KV6826                            SUPERSEDED SURVEY CONTROL
KV6826
KV6826  ELLIP H (10/23/02)     4.620  (m)                          GP(        ) 4 1
KV6826  NAD 83(1996)-  40 36 40.44239(N)     074 22 23.83917(W) AD(        ) 1
KV6826  ELLIP H (05/14/99)     4.628  (m)                          GP(        ) 4 1
KV6826  NAD 83(1996)-  40 36 40.44202(N)     074 22 23.83964(W) AD(        ) 1
KV6826  NAD 83(1992)-  40 36 40.44088(N)     074 22 23.83921(W) AD(        ) 1
KV6826  ELLIP H (04/25/94)     4.568  (m)                          GP(        ) 3 1
KV6826  NAD 83(1986)-  40 36 40.44187(N)     074 22 23.84129(W) AD(        ) 1
KV6826
KV6826.Superseded values are not recommended for survey control.
KV6826.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
KV6826.See file dsdata.txt to determine how the superseded data were derived.
KV6826
KV6826_U.S. NATIONAL GRID SPATIAL ADDRESS: 18TWK5301695790(NAD 83)
KV6826_MARKER: DD = SURVEY DISK
KV6826_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
KV6826_SP_SET: CONCRETE POST
KV6826_STAMPING: 20 G 1 1992
KV6826_MARK LOGO: NJGS
KV6826_MAGNETIC: N = NO MAGNETIC MATERIAL
KV6826_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
KV6826+STABILITY: SURFACE MOTION
KV6826_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
KV6826+SATELLITE: SATELLITE OBSERVATIONS - March 22, 1993
KV6826
KV6826  HISTORY      - Date     Condition        Report By
KV6826  HISTORY      - 1992     MONUMENTED       NJGS
KV6826  HISTORY      - 19930322 GOOD             NJHA
KV6826  HISTORY      - 20070603 GOOD             GEOCAC
KV6826
KV6826                            STATION DESCRIPTION
KV6826
KV6826'DESCRIBED BY NEW JERSEY GEODETIC SURVEY 1992
KV6826'THE STATION IS LOCATED IN CLARK TOWNSHIP ON THE SOUTHEAST SIDE OF
KV6826'RARITAN ROAD ON THE GROUNDS OF THE ASHBROOK GOLF COURSE, PART OF THE
KV6826'UNION COUNTY PARK SYSTEM. TO REACH THE STATION FROM THE INTERSECTION
KV6826'OF CENTRAL AVENUE AND THE GARDEN STATE PARKWAY AT INTERCHANGE 135, GO
KV6826'WEST ON CENTRAL AVENUE FOR 0.4 MI (0.6 KM) TO THE INTERSECTION WITH
KV6826'OLD RARITAN ROAD ON THE LEFT. TURN LEFT AND GO SOUTHWEST FOR 1.8 MI
KV6826'(2.9 KM) ON OLD RARITAN ROAD, CROSSING A LAKE, TO A FORK JUNCTION
KV6826'WITH OAK RIDGE ROAD.  TAKE THE RIGHT FORK AND GO 0.2 MI (0.3 KM) ON
KV6826'OAK RIDGE ROAD TO THE INTERSECTION WITH LAKE AVENUE. TURN RIGHT AND
KV6826'GO 0.6 MI (1.0 KM) TO THE FORK JUNCTION WITH MARTINE AVENUE, BEAR TO
KV6826'THE LEFT AND GO 0.85 MI (1.37 KM) ON MARTINE AVENUE TO THE
KV6826'INTERSECTION WITH RARITAN ROAD. TURN LEFT AND GO 0.75 MI (1.21 KM) TO
KV6826'A LEFT TURN AT THE GOLF COURSE AND THE JUNCTION WITH TERRIL ROAD ON
KV6826'THE RIGHT, TURN LEFT AND CONTINUE ON RARITAN ROAD FOR 0.6 MI
KV6826'(1.0 KM) TO THE DRIVEWAY AT THE ENTRANCE TO THE ASHBROOK GOLF COURSE
KV6826'AND THE STATION ON THE LEFT. THE STATION IS SET FLUSH WITH THE GROUND
KV6826'IN THE CENTER OF A GRASS ISLAND AT THE ENTRANCE TO THE ASHBROOK GOLF
KV6826'COURSE. THE STATION IS 13.1 M (43.0 FT) NORTWEST FROM THE NORTH
KV6826'CORNER OF THE BATTLE OF SHORT HILLS MONUMENT AT THE NORTHWEST END OF
KV6826'THE PARKING LOT, 36.0 M (118.1 FT) SOUTHEAST FROM THE CENTERLINE OF
```

Loops and Misclosures

Leica Geosystems

Loops and Misclosures

www.MOVE3.com

Created: 10/27/2010 11:50:51

Project Information

Project name:	gps101310
Date created:	10/15/2010 08:14:49
Time zone:	-5h 00'
Coordinate system name:	NJ NAD83 (GRS80)
Application software:	LEICA Geo Office 7.0
Processing kernel:	MOVE3 4.0.1
Critical value W-test is:	1.96
Dimension:	3D

GPS Baseline Loops

Loop 1

From	To	dX[fts]	dY[fts]	dZ[fts]
0005	AG9916	9763.5440	-3131.5376	-6525.5907
AG9916	0006	-4362.2213	3427.0595	5188.3206
0006	kv6616	-596.7242	5418.3783	6280.6732
kv6616	0005	-4804.6301	-5713.8514	-4943.4210
X:	-0.0315 fts	W-Test:	-1.38	
Y:	0.0488 fts		1.38	
Z:	-0.0179 fts		-0.52	
Easting:	-0.0173 fts	W-Test:	-0.72	
Northing:	0.0225 fts		0.65	
Height:	-0.0538 fts		-1.56	
Closing error:	0.0608 fts	(1.6 ppm)	Ratio:(1:608640)	
Length:	37019.5479 fts			

Loop 2

From	To	dX[fts]	dY[fts]	dZ[fts]
0006	AG9916	4362.2213	-3427.0595	-5188.3206
AG9916	0004	-12493.4827	1503.4639	5536.0846
0004	kv6616	7534.5552	7341.9770	5932.8994
kv6616	0006	596.7242	-5418.3783	-6280.6732
X:	0.0180 fts	W-Test:	0.89	
Y:	0.0032 fts		0.08	

Z:	-0.0098 fts		-0.22
Easting:	0.0182 fts	W-Test:	0.83
Northing:	-0.0086 fts		-0.21
Height:	-0.0050 fts		-0.12
Closing error:	0.0207 fts	(0.5 ppm)	Ratio: (1:2015972)
Length:	41737.2853 fts		

Loop 3

From	To	dX[fts]	dY[fts]	dZ[fts]
0006	AG9916	4362.2213	-3427.0595	-5188.3206
AG9916	0003	-13578.1118	1434.2566	5789.0579
0003	kv6616	8619.1790	7411.1705	5679.9152
kv6616	0006	596.7242	-5418.3783	-6280.6732

X:	0.0126 fts	W-Test:	0.74
Y:	-0.0107 fts		-0.31
Z:	-0.0206 fts		-0.56
Easting:	0.0093 fts	W-Test:	0.50
Northing:	-0.0246 fts		-0.70
Height:	-0.0031 fts		-0.09
Closing error:	0.0265 fts	(0.6 ppm)	Ratio: (1:1642547)
Length:	43449.4896 fts		

Loop 4

From	To	dX[fts]	dY[fts]	dZ[fts]
0001	AG9916	17211.5262	-1803.2274	-7346.2123
AG9916	0002	-15782.3602	1433.0927	6481.3180
0002	kv6524	-2593.6832	315.2337	1171.4843
kv6524	0001	1164.5202	54.9125	-306.5965

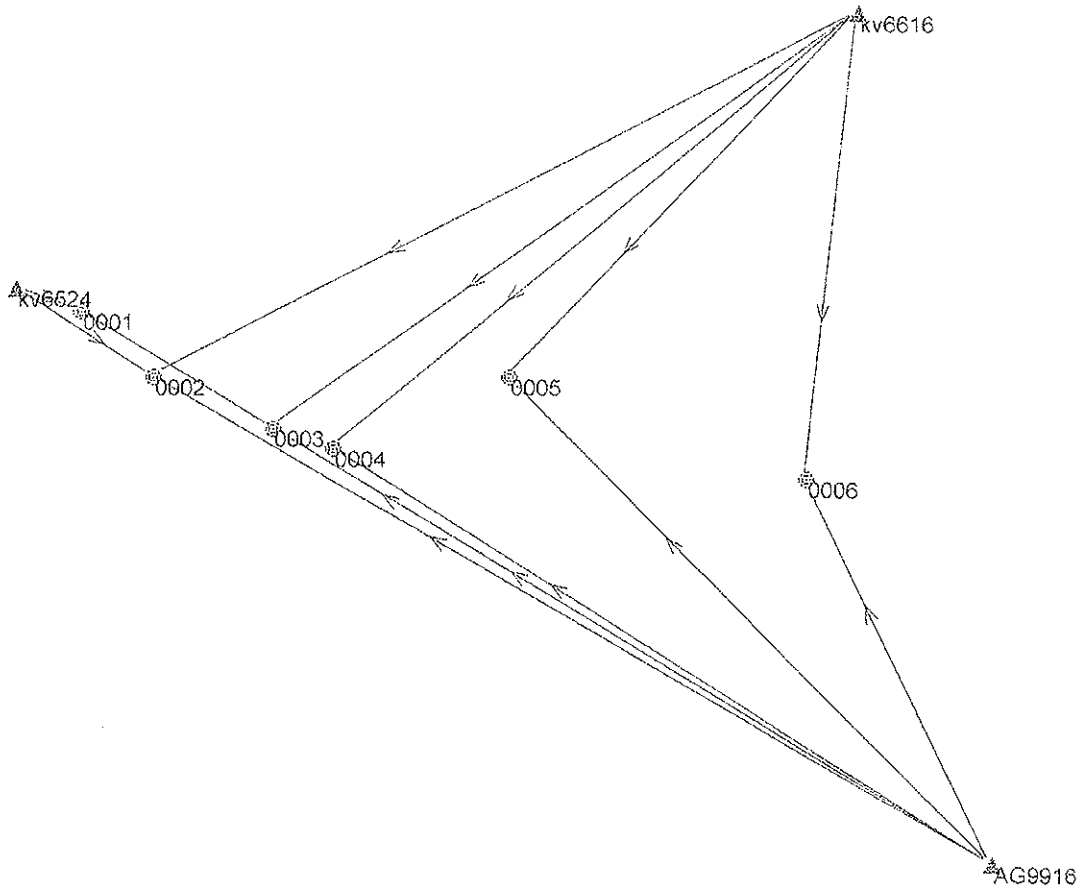
X:	0.0030 fts	W-Test:	0.12
Y:	0.0116 fts		0.28
Z:	-0.0066 fts		-0.19
Easting:	0.0060 fts	W-Test:	0.23
Northing:	0.0018 fts		0.05
Height:	-0.0121 fts		-0.32
Closing error:	0.0136 fts	(0.3 ppm)	Ratio: (1:2930544)
Length:	39990.6890 fts		

Loop 5

From	To	dX[fts]	dY[fts]	dZ[fts]
0006	AG9916	4362.2213	-3427.0595	-5188.3206
AG9916	0002	-15782.3602	1433.0927	6481.3180
0002	kv6616	10823.4444	7412.3939	4987.6745
kv6616	0006	596.7242	-5418.3783	-6280.6732

X:	0.0296 fts	W-Test:	1.81

Y:	0.0489 fts		1.62	
Z:	-0.0013 fts		-0.05	
Easting:	0.0416 fts	W-Test:	2.35	⚠
Northing:	0.0245 fts		0.92	
Height:	-0.0306 fts		-1.12	
Closing error:	0.0572 fts	(1.2 ppm)	Ratio:(1:823450)	
Length:	47067.8658 fts			



6561.666667 fts

+ Estimated
□ Navigated
⊠ SPP
○ Measured
◎ Average
▽ Reference
◎ Adjusted
△ Control - 1D
▲ Control - 2D
▲ Control - 3D

10/27/2010 11:52:19

Points of Project: gps101310 (Coordinate System: NJ NAD83 (GRS80), Units: fts)

Point Id	Date/Time	Northing	Easting	Ortho. Hgt	Code	Posn. Qlty	Posn. + Hgt. Qlty
AG9916	10/13/2010 08:12:50	627919.1536	507094.2569	82.6556		2.2111	4.2399
0001	10/13/2010 08:56:09	637620.0571	490992.1837	41.8202		0.0030	0.0264
kv6524	10/13/2010 08:56:09	638020.8938	489855.4524	45.2160		4.9767	9.4395
0002	10/13/2010 10:19:47	636482.8161	492270.3326	40.0713		0.0029	0.0146
kv6616	10/13/2010 10:19:47	643035.2136	504679.7990	60.9889		3.3943	6.5925
0003	10/13/2010 10:55:25	635574.7166	494394.5473	36.3322		0.0227	0.0343
0004	10/13/2010 11:17:45	635237.4345	495458.1141	41.3920		0.0142	0.0268
0005	10/13/2010 11:48:55	636534.8325	498523.5519	48.1763		0.0185	0.0468
0006	10/13/2010 12:19:35	634765.6039	503806.8922	60.5198		0.0232	0.0403

Loops and Misclosures

www.MOVE3.com

Created: 02/21/2011 12:06:20

Project Information

Project name:	gpsboundbrook101410
Date created:	02/21/2011 11:48:56
Time zone:	-5h 00'
Coordinate system name:	NEW JERSEY NAD83 (3)
Application software:	LEICA Geo Office 7.0
Processing kernel:	MOVE3 4.0.1
Critical value W-test is:	1.96
Dimension:	3D

GPS Baseline Loops

Loop 1

From	To	dX[m]	dY[m]	dZ[m]
0007	AG 9916	599.9431	-1380.9136	-1728.8925
AG 9916	0008	785.4906	2125.9245	2135.4070
0008	kv6805	6123.9462	1844.8375	189.4349
kv6805	0007	-7509.3554	-2589.9176	-595.8751
X:	0.0245 m	W-Test:	0.32	
Y:	-0.0692 m		-2.97	⚠
Z:	0.0742 m		2.78	⚠
Easting:	0.0050 m	W-Test:	0.07	
Northing:	0.0087 m		0.31	
Height:	0.1040 m		3.60	⚠
Closing error:	0.1044 m	(5.3 ppm)	Ratio:(1:189303)	
Length:	19770.8476 m			

Loop 2

From	To	dX[m]	dY[m]	dZ[m]
0009	AG 9916	-2347.9113	-2275.6427	-1816.9025
AG 9916	0010	2911.0605	2015.0953	1347.4895
0010	kv6826	1983.3990	3387.3393	3210.6018
kv6826	0009	-2546.5429	-3126.7995	-2741.1804
X:	0.0052 m	W-Test:	0.60	
Y:	-0.0077 m		-0.54	

Z:	0.0085 m		0.62
Easting:	0.0029 m	W-Test:	0.32
Northing:	0.0008 m		0.05
Height:	0.0122 m		0.89
Closing error:	0.0126 m	(0.7 ppm)	Ratio: (1:1388715)
Length:	17475.9890 m		

Loop 3

From	To	dX[m]	dY[m]	dZ[m]
0010	AG 9916	-2911.0605	-2015.0953	-1347.4895
AG 9916	0008	785.4906	2125.9245	2135.4070
0008	kv6826	4108.9562	3276.5323	2422.6825
kv6826	0010	-1983.3990	-3387.3393	-3210.6018

X:	-0.0127 m	W-Test:	-1.81
Y:	0.0222 m		1.79
Z:	-0.0019 m		-0.12
Easting:	-0.0062 m	W-Test:	-0.83
Northing:	0.0147 m		1.04
Height:	-0.0200 m		-1.47
Closing error:	0.0256 m	(1.4 ppm)	Ratio:(1:692864)
Length:	17760.1589 m		

Points of Project: gpsboundbrook101410 (Coordinate System: NJ NAD83 (GRS80), Units: m)

Point Id	Date/Time	Northing	Easting	Ortho. Hgt.	Code
kv6805	10/14/2010 09:13:16	194443.4614	162281.1382	43.1752	
kv6826	10/14/2010 10:52:51	197387.0699	160722.2104	37.4290	
AG 9916	10/14/2010 08:45:55	191390.1408	154562.6386	25.1935	
0010	10/14/2010 12:49:51	193170.4804	157906.0178	20.4946	
0009	10/14/2010 11:24:25	193788.1628	157433.0268	20.2922	
0006	10/14/2010 08:54:03	193476.9430	153560.6479	18.4465	
0008	10/14/2010 10:52:51	194207.7769	155887.5728	18.3797	
0007	10/14/2010 09:42:45	193672.9169	154353.5780	16.7857	
kv6524	10/14/2010 12:28:06	194469.1574	149308.2405	13.7819	
1	10/14/2010 12:49:51	194346.9821	149654.7169	12.7468	

Results – Baseline

Leica Geosystems

Results - Baseline
kv6524 - 0001

Project Information

Project name:	gps101310
Date created:	10/15/2010 08:14:49
Time zone:	-5h 00'
Coordinate system name:	NEW JERSEY NAD83 (3)
Application software:	LEICA Geo Office 7.0
Processing kernel:	PSI-Pro 2.0
Processed:	10/27/2010 11:37:31

Point Information

	Reference: kv6524	Rover: 0001
Receiver type / S/N:	GX1230 / 457691	GX1230GG / 350414
Antenna type / S/N:	AX1202 Tripod / -	AX1202 Tripod / -
Antenna height:	1.2790 m	1.2940 m
Initial coordinates:		
Latitude:	40° 35' 06.08626" N	40° 35' 02.18684" N
Longitude:	74° 30' 29.41843" W	74° 30' 14.69549" W
Ellip. Hgt:	-19.3214 m	-19.7573 m

Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Broadcast	Broadcast	
Ephemeris type (GLONASS):	Broadcast	Broadcast	
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS	
Frequency:	Automatic	Automatic	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	2	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	None	Switched to using no ionospheric model. For one or more Computed ionospheric models derived from the reference station kv6524 the time span of usable data is too short - these models are not used.
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

Satellite Selection

Manually disabled GPS satellites (PRNs):	None
Manually disabled GLONASS satellites (Slot Id):	None

Final Coordinates

	Reference:kv6524	Rover:0001
Coordinates:		
Latitude:	40° 35' 06.08626" N	40° 35' 02.12581" N
Longitude:	74° 30' 29.41843" W	74° 30' 14.68360" W
Ellip. Hgt:	-19.3214 m	-20.3569 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

Quality: Sd. Lat: 0.0004 m Sd. Lon: 0.0003 m Sd. Hgt: 0.0008 m
Posn. Qlty: 0.0005 m Sd. Slope: 0.0004 m

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Results - Baseline
AG9916 - 0001

Project Information

Project name:	gps101310
Date created:	10/15/2010 08:14:49
Time zone:	-5h 00'
Coordinate system name:	NEW JERSEY NAD83 (3)
Application software:	LEICA Geo Office 7.0
Processing kernel:	PSI-Pro 2.0
Processed:	10/27/2010 11:37:32

Point Information

	Reference: AG9916	Rover: 0001
Receiver type / S/N:	SR530 / 38743	GX1230GG / 350414
Antenna type / S/N:	AT502 Tripod / -	AX1202 Tripod / -
Antenna height:	1.1530 m	1.2940 m
Initial coordinates:		
Latitude:	40° 33' 26.21313" N	40° 35' 02.18684" N
Longitude:	74° 26' 46.04498" W	74° 30' 14.69549" W
Ellip. Hgt:	-7.7705 m	-19.7573 m

Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Broadcast	Broadcast	
Ephemeris type (GLONASS):	Broadcast	Broadcast	
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS	
Frequency:	Automatic	Automatic	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	10	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

Satellite Selection

Manually disabled GPS satellites (PRNs):	None

Manually disabled GLONASS satellites (Slot Id):	None

Final Coordinates

	Reference:AG9916	Rover:0001
Coordinates:		
Latitude:	40° 33' 26.21313" N	40° 35' 02.12587" N
Longitude:	74° 26' 46.04498" W	74° 30' 14.68360" W
Ellip. Hgt:	-7.7705 m	-20.3409 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

Quality:	Sd. Lat: 0.0003 m	Sd. Lon: 0.0003 m	Sd. Hgt: 0.0008 m
	Posn. Qlty: 0.0005 m	Sd. Slope: 0.0004 m	

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Results - Baseline
kv6524 - 0002

Project Information

Project name:	gps101310
Date created:	10/15/2010 08:14:49
Time zone:	-5h 00'
Coordinate system name:	NEW JERSEY NAD83 (3)
Application software:	LEICA Geo Office 7.0
Processing kernel:	PSI-Pro 2.0
Processed:	10/27/2010 11:37:32

Point Information

	Reference: kv6524	Rover: 0002
Receiver type / S/N:	GX1230 / 457691	GX1230GG / 350414
Antenna type / S/N:	AX1202 Tripod / -	AX1202 Tripod / -
Antenna height:	1.2790 m	1.0970 m
Initial coordinates:		
Latitude:	40° 35' 06.08626" N	40° 34' 50.92710" N
Longitude:	74° 30' 29.41843" W	74° 29' 58.12083" W
Ellip. Hgt:	-19.3214 m	-23.8483 m

Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Broadcast	Broadcast	
Ephemeris type (GLONASS):	Broadcast	Broadcast	
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS	
Frequency:	Automatic	Automatic	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	2	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	None	Switched to using no ionospheric model. For one or more Computed ionospheric models derived from the reference station kv6524 the time span of usable data is too short - these models are not used.
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

Satellite Selection

Manually disabled GPS satellites (PRNs):	None
Manually disabled GLONASS satellites (Slot Id):	None

Final Coordinates

	Reference:kv6524	Rover:0002
Coordinates:		
Latitude:	40° 35' 06.08626" N	40° 34' 50.88744" N
Longitude:	74° 30' 29.41843" W	74° 29' 58.11634" W
Ellip. Hgt:	-19.3214 m	-20.8812 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

Quality:	Sd. Lat: 0.0004 m	Sd. Lon: 0.0004 m	Sd. Hgt: 0.0009 m
	Posn. Qlty: 0.0006 m	Sd. Slope: 0.0004 m	

Leica Geosystems

Results - Baseline
kv6616 - 0002

Project Information

Project name:	gps101310
Date created:	10/15/2010 08:14:49
Time zone:	-5h 00'
Coordinate system name:	NEW JERSEY NAD83 (3)
Application software:	LEICA Geo Office 7.0
Processing kernel:	PSI-Pro 2.0
Processed:	10/27/2010 11:37:32

Point Information

	Reference: kv6616	Rover: 0002
Receiver type / S/N:	GX1230 / 457691	GX1230GG / 350414
Antenna type / S/N:	AX1202 Tripod / -	AX1202 Tripod / -
Antenna height:	1.2130 m	1.0970 m
Initial coordinates:		
Latitude:	40° 35' 55.60854" N	40° 34' 50.92710" N
Longitude:	74° 27' 17.22829" W	74° 29' 58.12083" W
Ellip. Hgt:	-14.4010 m	-23.8483 m

Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Broadcast	Broadcast	
Ephemeris type (GLONASS):	Broadcast	Broadcast	
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS	
Frequency:	Automatic	Automatic	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	2	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

Satellite Selection

Manually disabled GPS satellites (PRNs):	None

Manually disabled GLONASS satellites (Slot Id):	None

Final Coordinates

	Reference:kv6616	Rover:0002
Coordinates:		
Latitude:	40° 35' 55.60854" N	40° 34' 50.88753" N
Longitude:	74° 27' 17.22829" W	74° 29' 58.11626" W
Ellip. Hgt:	-14.4010 m	-20.8813 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

Quality:	Sd. Lat: 0.0003 m	Sd. Lon: 0.0003 m	Sd. Hgt: 0.0008 m
	Posn. Qlty: 0.0004 m	Sd. Slope: 0.0003 m	

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Results - Baseline
AG9916 - 0002

Project Information

Project name:	gps101310
Date created:	10/15/2010 08:14:49
Time zone:	-5h 00'
Coordinate system name:	NEW JERSEY NAD83 (3)
Application software:	LEICA Geo Office 7.0
Processing kernel:	PSI-Pro 2.0
Processed:	10/27/2010 11:37:32

Point Information

	Reference: AG9916	Rover: 0002
Receiver type / S/N:	SR530 / 38743	GX1230GG / 350414
Antenna type / S/N:	AT502 Tripod / -	AX1202 Tripod / -
Antenna height:	1.1530 m	1.0970 m
Initial coordinates:		
Latitude:	40° 33' 26.21313" N	40° 34' 50.92710" N
Longitude:	74° 26' 46.04498" W	74° 29' 58.12083" W
Ellip. Hgt:	-7.7705 m	-23.8483 m

Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Broadcast	Broadcast	
Ephemeris type (GLONASS):	Broadcast	Broadcast	
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS	
Frequency:	Automatic	Automatic	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	10	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

Satellite Selection

Manually disabled GPS satellites (PRNs):	None

Manually disabled GLONASS satellites (Slot Id):	None

Final Coordinates

	Reference:AG9916	Rover:0002
Coordinates:		
Latitude:	40° 33' 26.21313" N	40° 34' 50.88752" N
Longitude:	74° 26' 46.04498" W	74° 29' 58.11627" W
Ellip. Hgt:	-7.7705 m	-20.8689 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

Quality:	Sd. Lat: 0.0003 m	Sd. Lon: 0.0002 m	Sd. Hgt: 0.0006 m
	Posn. Qlty: 0.0004 m	Sd. Slope: 0.0003 m	

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Results - Baseline
kv6616 - 0003

Project Information

Project name:	gps101310
Date created:	10/15/2010 08:14:49
Time zone:	-5h 00'
Coordinate system name:	NEW JERSEY NAD83 (3)
Application software:	LEICA Geo Office 7.0
Processing kernel:	PSI-Pro 2.0
Processed:	10/27/2010 11:37:32

Point Information

	Reference: kv6616	Rover: 0003
Receiver type / S/N:	GX1230 / 457691	GX1230GG / 350414
Antenna type / S/N:	AX1202 Tripod / -	AX1202 Tripod / -
Antenna height:	1.2130 m	1.0600 m
Initial coordinates:		
Latitude:	40° 35' 55.60854" N	40° 34' 41.91657" N
Longitude:	74° 27' 17.22829" W	74° 29' 30.55709" W
Ellip. Hgt:	-14.4010 m	-28.5324 m

Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Broadcast	Broadcast	
Ephemeris type (GLONASS):	Broadcast	Broadcast	
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS	
Frequency:	Automatic	Automatic	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	2	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

Satellite Selection

Manually disabled GPS satellites (PRNs):	None

Manually disabled GLONASS satellites (Slot Id):	None

Final Coordinates

	Reference:kv6616	Rover:0003
Coordinates:		
Latitude:	40° 35' 55.60854" N	40° 34' 41.91241" N
Longitude:	74° 27' 17.22829" W	74° 29' 30.58444" W
Ellip. Hgt:	-14.4010 m	-22.0034 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

Quality:	Sd. Lat: 0.0002 m	Sd. Lon: 0.0001 m	Sd. Hgt: 0.0006 m
	Posn. Qlty: 0.0002 m	Sd. Slope: 0.0001 m	

Leica Geosystems

Results - Baseline
AG9916 - 0003

Project Information

Project name:	gps101310
Date created:	10/15/2010 08:14:49
Time zone:	-5h 00'
Coordinate system name:	NEW JERSEY NAD83 (3)
Application software:	LEICA Geo Office 7.0
Processing kernel:	PSI-Pro 2.0
Processed:	10/27/2010 11:37:32

Point Information

	Reference: AG9916	Rover: 0003
Receiver type / S/N:	SR530 / 38743	GX1230GG / 350414
Antenna type / S/N:	AT502 Tripod / -	AX1202 Tripod / -
Antenna height:	1.1530 m	1.0600 m
Initial coordinates:		
Latitude:	40° 33' 26.21313" N	40° 34' 41.91657" N
Longitude:	74° 26' 46.04498" W	74° 29' 30.55709" W
Ellip. Hgt:	-7.7705 m	-28.5324 m

Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Broadcast	Broadcast	
Ephemeris type (GLONASS):	Broadcast	Broadcast	
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS	
Frequency:	Automatic	Automatic	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	10	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

Satellite Selection

Manually disabled GPS satellites (PRNs):	None

Manually disabled GLONASS satellites (Slot Id):	None

Final Coordinates

	Reference:AG9916	Rover:0003
Coordinates:		
Latitude:	40° 33' 26.21313" N	40° 34' 41.91192" N
Longitude:	74° 26' 46.04498" W	74° 29' 30.58487" W
Ellip. Hgt:	-7.7705 m	-21.9826 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

Quality:	Sd. Lat: 0.0004 m	Sd. Lon: 0.0003 m	Sd. Hgt: 0.0013 m
	Posn. Qlty: 0.0005 m	Sd. Slope: 0.0003 m	

Leica Geosystems

Results - Baseline
kv6616 - 0004

Project Information

Project name:	gps101310
Date created:	10/15/2010 08:14:49
Time zone:	-5h 00'
Coordinate system name:	NEW JERSEY NAD83 (3)
Application software:	LEICA Geo Office 7.0
Processing kernel:	PSI-Pro 2.0
Processed:	10/27/2010 11:37:32

Point Information

	Reference: kv6616	Rover: 0004
Receiver type / S/N:	GX1230 / 457691	GX1230GG / 350414
Antenna type / S/N:	AX1202 Tripod / -	AX1202 Tripod / -
Antenna height:	1.2130 m	0.9830 m
Initial coordinates:		
Latitude:	40° 35' 55.60854" N	40° 34' 38.60917" N
Longitude:	74° 27' 17.22829" W	74° 29' 16.81015" W
Ellip. Hgt:	-14.4010 m	-25.9621 m

Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Broadcast	Broadcast	
Ephemeris type (GLONASS):	Broadcast	Broadcast	
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS	
Frequency:	Automatic	Automatic	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	2	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

Satellite Selection

Manually disabled GPS satellites (PRNs):	None

Manually disabled GLONASS satellites (Slot Id):	None

Final Coordinates

	Reference:kv6616	Rover:0004
Coordinates:		
Latitude:	40° 35' 55.60854" N	40° 34' 38.57803" N
Longitude:	74° 27' 17.22829" W	74° 29' 16.80024" W
Ellip. Hgt:	-14.4010 m	-20.4525 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

Quality:	Sd. Lat: 0.0002 m	Sd. Lon: 0.0001 m	Sd. Hgt: 0.0006 m
	Posn. Qlty: 0.0002 m	Sd. Slope: 0.0002 m	

Leica Geosystems

Results - Baseline
AG9916 - 0004

Project Information

Project name:	gps101310
Date created:	10/15/2010 08:14:49
Time zone:	-5h 00'
Coordinate system name:	NEW JERSEY NAD83 (3)
Application software:	LEICA Geo Office 7.0
Processing kernel:	PSI-Pro 2.0
Processed:	10/27/2010 11:37:33

Point Information

	Reference: AG9916	Rover: 0004
Receiver type / S/N:	SR530 / 38743	GX1230GG / 350414
Antenna type / S/N:	AT502 Tripod / -	AX1202 Tripod / -
Antenna height:	1.1530 m	0.9830 m
Initial coordinates:		
Latitude:	40° 33' 26.21313" N	40° 34' 38.60917" N
Longitude:	74° 26' 46.04498" W	74° 29' 16.81015" W
Ellip. Hgt:	-7.7705 m	-25.9621 m

Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Broadcast	Broadcast	
Ephemeris type (GLONASS):	Broadcast	Broadcast	
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS	
Frequency:	Automatic	Automatic	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	10	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

Satellite Selection

Manually disabled GPS satellites (PRNs):	None

Manually disabled GLONASS satellites (Slot Id):	None

Final Coordinates

	Reference:AG9916	Rover:0004
Coordinates:		
Latitude:	40° 33' 26.21313" N	40° 34' 38.57769" N
Longitude:	74° 26' 46.04498" W	74° 29' 16.80055" W
Ellip. Hgt:	-7.7705 m	-20.4323 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

Quality:	Sd. Lat: 0.0005 m	Sd. Lon: 0.0004 m	Sd. Hgt: 0.0015 m
	Posn. Qlty: 0.0006 m	Sd. Slope: 0.0004 m	

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Results - Baseline
kv6616 - 0005

Project Information

Project name:	gps101310
Date created:	10/15/2010 08:14:49
Time zone:	-5h 00'
Coordinate system name:	NEW JERSEY NAD83 (3)
Application software:	LEICA Geo Office 7.0
Processing kernel:	PSI-Pro 2.0
Processed:	10/27/2010 11:37:33

Point Information

	Reference: kv6616	Rover: 0005
Receiver type / S/N:	GX1230 / 457691	GX1230GG / 350414
Antenna type / S/N:	AX1202 Tripod / -	AX1202 Tripod / -
Antenna height:	1.2130 m	1.1050 m
Initial coordinates:		
Latitude:	40° 35' 55.60854" N	40° 34' 51.43508" N
Longitude:	74° 27' 17.22829" W	74° 28' 37.06419" W
Ellip. Hgt:	-14.4010 m	-20.2674 m

Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Broadcast	Broadcast	
Ephemeris type (GLONASS):	Broadcast	Broadcast	
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS	
Frequency:	Automatic	Automatic	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	2	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

Satellite Selection

Manually disabled GPS satellites (PRNs):	None

Manually disabled GLONASS satellites (Slot Id):	None

Final Coordinates

	Reference:kv6616	Rover:0005
Coordinates:		
Latitude:	40° 35' 55.60854" N	40° 34' 51.39335" N
Longitude:	74° 27' 17.22829" W	74° 28' 37.06541" W
Ellip. Hgt:	-14.4010 m	-18.3625 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

Quality:	Sd. Lat: 0.0002 m	Sd. Lon: 0.0002 m	Sd. Hgt: 0.0005 m
	Posn. Qlty: 0.0003 m	Sd. Slope: 0.0002 m	

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Results - Baseline
AG9916 - 0005

Project Information

Project name:	gps101310
Date created:	10/15/2010 08:14:49
Time zone:	-5h 00'
Coordinate system name:	NEW JERSEY NAD83 (3)
Application software:	LEICA Geo Office 7.0
Processing kernel:	PSI-Pro 2.0
Processed:	10/27/2010 11:37:33

Point Information

	Reference: AG9916	Rover: 0005
Receiver type / S/N:	SR530 / 38743	GX1230GG / 350414
Antenna type / S/N:	AT502 Tripod / -	AX1202 Tripod / -
Antenna height:	1.1530 m	1.1050 m
Initial coordinates:		
Latitude:	40° 33' 26.21313" N	40° 34' 51.43508" N
Longitude:	74° 26' 46.04498" W	74° 28' 37.06419" W
Ellip. Hgt:	-7.7705 m	-20.2674 m

Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Broadcast	Broadcast	
Ephemeris type (GLONASS):	Broadcast	Broadcast	
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS	
Frequency:	Automatic	Automatic	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	10	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

Satellite Selection

Manually disabled GPS satellites (PRNs):	None

Manually disabled GLONASS satellites (Slot Id):	None

Final Coordinates

	Reference:AG9916	Rover:0005
Coordinates:		
Latitude:	40° 33' 26.21313" N	40° 34' 51.39287" N
Longitude:	74° 26' 46.04498" W	74° 28' 37.06573" W
Ellip. Hgt:	-7.7705 m	-18.3244 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

Quality:

Sd. Lat: 0.0005 m	Sd. Lon: 0.0005 m	Sd. Hgt: 0.0012 m
Posn. Qlty: 0.0007 m	Sd. Slope: 0.0006 m	

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Results - Baseline
kv6616 - 0006

Project Information

Project name:	gps101310
Date created:	10/15/2010 08:14:49
Time zone:	-5h 00'
Coordinate system name:	NEW JERSEY NAD83 (3)
Application software:	LEICA Geo Office 7.0
Processing kernel:	PSI-Pro 2.0
Processed:	10/27/2010 11:37:33

Point Information

	Reference: kv6616	Rover: 0006
Receiver type / S/N:	GX1230 / 457691	GX1230GG / 350414
Antenna type / S/N:	AX1202 Tripod / -	AX1202 Tripod / -
Antenna height:	1.2130 m	1.1450 m
Initial coordinates:		
Latitude:	40° 35' 55.60854" N	40° 34' 33.91912" N
Longitude:	74° 27' 17.22829" W	74° 27' 28.61280" W
Ellip. Hgt:	-14.4010 m	-16.3076 m

Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Broadcast	Broadcast	
Ephemeris type (GLONASS):	Broadcast	Broadcast	
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS	
Frequency:	Automatic	Automatic	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	2	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

Satellite Selection

Manually disabled GPS satellites (PRNs):	None

Manually disabled GLONASS satellites (Slot Id):	None

Final Coordinates

	Reference:kv6616	Rover:0006
Coordinates:		
Latitude:	40° 35' 55.60854" N	40° 34' 33.88995" N
Longitude:	74° 27' 17.22829" W	74° 27' 28.59645" W
Ellip. Hgt:	-14.4010 m	-14.5590 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

Quality:	Sd. Lat: 0.0001 m	Sd. Lon: 0.0001 m	Sd. Hgt: 0.0003 m
	Posn. Qlty: 0.0002 m	Sd. Slope: 0.0001 m	

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Results - Baseline
AG9916 - 0006

Project Information

Project name:	gps101310
Date created:	10/15/2010 08:14:49
Time zone:	-5h 00'
Coordinate system name:	NEW JERSEY NAD83 (3)
Application software:	LEICA Geo Office 7.0
Processing kernel:	PSI-Pro 2.0
Processed:	10/27/2010 11:37:33

Point Information

	Reference: AG9916	Rover: 0006
Receiver type / S/N:	SR530 / 38743	GX1230GG / 350414
Antenna type / S/N:	AT502 Tripod / -	AX1202 Tripod / -
Antenna height:	1.1530 m	1.1450 m
Initial coordinates:		
Latitude:	40° 33' 26.21313" N	40° 34' 33.91912" N
Longitude:	74° 26' 46.04498" W	74° 27' 28.61280" W
Ellip. Hgt:	-7.7705 m	-16.3076 m

Processing Parameters

Parameters	Selected	Used	Comment
Cut-off angle:	15°	15°	
Ephemeris type (GPS):	Broadcast	Broadcast	
Ephemeris type (GLONASS):	Broadcast	Broadcast	
Solution type:	Automatic	Phase: all fix	
GNSS type:	Automatic	GPS	
Frequency:	Automatic	Automatic	
Fix ambiguities up to:	80 km	80 km	
Min. duration for float solution (static):	5' 00"	5' 00"	
Sampling rate:	Use all	10	
Tropospheric model:	Hopfield	Hopfield	
Ionospheric model:	Automatic	Computed	
Use stochastic modelling:	Yes	Yes	
Min. distance:	8 km	8 km	
Ionospheric activity:	Automatic	Automatic	

Satellite Selection

Manually disabled GPS satellites (PRNs):	None

Manually disabled GLONASS satellites (Slot Id):	None

Final Coordinates

	Reference:AG9916	Rover:0006
Coordinates:		
Latitude:	40° 33' 26.21313" N	40° 34' 33.88970" N
Longitude:	74° 26' 46.04498" W	74° 27' 28.59699" W
Ellip. Hgt:	-7.7705 m	-14.5373 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	
Quality:	Sd. Lat: 0.0002 m	Sd. Lon: 0.0002 m
	Posn. Qlty: 0.0003 m	Sd. Slope: 0.0002 m

Sd. Hgt: 0.0004 m

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Processing Summary
gpsboundbrook101410

Project Information

Project name:	gpsboundbrook101410
Date created:	02/21/2011 11:48:56
Time zone:	-5h 00'
Coordinate system name:	NEW JERSEY NAD83 (3)
Application software:	LEICA Geo Office 7.0
Start date and time:	10/14/2010 09:42:43
End date and time:	10/14/2010 13:05:35
Manually occupied points:	11
Processing kernel:	PSI-Pro 2.0
Processed:	02/21/2011 12:01:21

Processing Parameters

Parameters	**Selected**
Cut-off angle:	15°
Ephemeris type:	Broadcast
Solution type:	Automatic
GNSS type:	Automatic
Frequency:	Automatic
Fix ambiguities up to:	80 km
Min. duration for float solution (static):	5' 00"
Sampling rate:	Use all
Tropospheric model:	Hopfield
Ionospheric model:	Automatic
Use stochastic modelling:	Yes
Min. distance:	8 km
Ionospheric activity:	Automatic

Baseline Overview

kv6805 - 0007	**Reference: kv6805**	**Rover: 0007**
Coordinates:		
Latitude:	40° 35' 04.92622" N	40° 34' 40.23008" N
Longitude:	74° 21' 17.72313" W	74° 26' 54.87534" W
Ellip. Hgt:	10.4246 m	-16.1949 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

AG 9916 - 0007	**Reference: AG 9916**	**Rover: 0007**

Coordinates:		
Latitude:	40° 33' 26.21313" N	40° 34' 40.23051" N
Longitude:	74° 26' 46.04498" W	74° 26' 54.87552" W
Ellip. Hgt:	-7.7705 m	-16.1772 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

kv6805 - 0008	**Reference: kv6805**	**Rover: 0008**
Coordinates:		
Latitude:	40° 35' 04.92622" N	40° 34' 57.53703" N
Longitude:	74° 21' 17.72313" W	74° 25' 49.62862" W
Ellip. Hgt:	10.4246 m	-14.6829 m
Solution type:	Float	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	No	

kv6826 - 0008	**Reference: kv6826**	**Rover: 0008**
Coordinates:		
Latitude:	40° 36' 40.44222" N	40° 34' 57.53723" N
Longitude:	74° 22' 23.83894" W	74° 25' 49.62816" W
Ellip. Hgt:	4.6230 m	-14.5525 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

AG 9916 - 0008	**Reference: AG 9916**	**Rover: 0008**
Coordinates:		
Latitude:	40° 33' 26.21313" N	40° 34' 57.53774" N
Longitude:	74° 26' 46.04498" W	74° 25' 49.62858" W
Ellip. Hgt:	-7.7705 m	-14.5612 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

kv6826 - 0009	**Reference: kv6826**	**Rover: 0009**
Coordinates:		
Latitude:	40° 36' 40.44222" N	40° 34' 43.88779" N
Longitude:	74° 22' 23.83894" W	74° 24' 43.92497" W
Ellip. Hgt:	4.6230 m	-12.5994 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

AG 9916 - 0009	**Reference: AG 9916**	**Rover: 0009**

Coordinates:		
Latitude:	40° 33' 26.21313" N	40° 34' 43.88780" N
Longitude:	74° 26' 46.04498" W	74° 24' 43.92526" W
Ellip. Hgt:	-7.7705 m	-12.6003 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

kv6826 - 0010	**Reference: kv6826**	**Rover: 0010**
Coordinates:		
Latitude:	40° 36' 40.44222" N	40° 34' 23.84536" N
Longitude:	74° 22' 23.83894" W	74° 24' 23.83984" W
Ellip. Hgt:	4.6230 m	-12.3699 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

kv6524 - 0010	**Reference: kv6524**	**Rover: 0010**
Coordinates:		
Latitude:	40° 35' 06.08626" N	40° 34' 23.84519" N
Longitude:	74° 30' 29.41843" W	74° 24' 23.83972" W
Ellip. Hgt:	-19.3214 m	-12.4301 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

1 - 0010	**Reference: 1**	**Rover: 0010**
Coordinates:		
Latitude:	40° 35' 02.12585" N	40° 34' 23.84586" N
Longitude:	74° 30' 14.68360" W	74° 24' 23.84194" W
Ellip. Hgt:	12.7468 m	20.7053 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

AG 9916 - 0010	**Reference: AG 9916**	**Rover: 0010**
Coordinates:		
Latitude:	40° 33' 26.21313" N	40° 34' 23.84541" N
Longitude:	74° 26' 46.04498" W	74° 24' 23.84000" W
Ellip. Hgt:	-7.7705 m	-12.3586 m
Solution type:	Phase: all fix	
GNSS type:	GPS	
Frequency:	L1 and L2	
Ambiguity:	Yes	

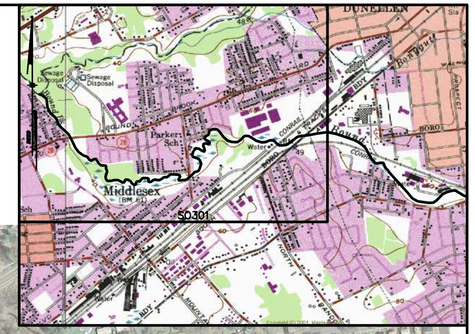
Land Survey Figures

TRANSECT COORDINATE TABLE:

PAI #	NORTHING	EASTING	ELEVATION	TRANSECT #
1003	N637994.4	E491303.12	32.06	T-0 LEFT 0.0
1004	N637980.65	E491235.89	31.91	T-0 RIGHT 0.0
1001	N637600.14	E491526.52	30.67	T-5 RIGHT 0.1
1002	N637657.42	E491522.08	31.14	T-5 LEFT 0.1
1005	N637322.73	E491711.16	30.69	T-10 LEFT 0.2
1006	N637301.66	E491675.62	31.91	T-10 RIGHT 0.2
1007	N636912.97	E491994.6	33.28	T-15 LEFT 0.3
1008	N636889.68	E491953.96	34.83	T-15 RIGHT 0.3
1009	N636542.8	E492320.38	34.87	T-20 LEFT 0.4
1010	N636522.99	E492266.24	35.90	T-20 RIGHT 0.4
1012	N636085.23	E492507.23	32.62	T-25 LEFT 0.5
1013	N636062.8	E492471.82	34.45	T-25 RIGHT 0.5
1014	N635876.17	E492890.77	31.58	T-30 LEFT 0.6
1015	N635845.26	E492886	32.08	T-30 RIGHT 0.6
1016	N635571.44	E493259.42	34.49	T-35 RIGHT 0.7
1017	N635599.46	E493297.24	33.87	T-35 LEFT 0.7
1018	N635335.18	E493672.39	32.17	T-40 LEFT 0.8
1019	N635293.75	E493668.47	34.70	T-40 RIGHT 0.8
1020	N635253.64	E494168.18	33.22	T-45 RIGHT 0.9
1021	N635295.38	E494168.28	34.46	T-45 LEFT 0.9
2004	N635322.03	E494637.85	32.25	T-50 LEFT 1.0
2005	N635287.24	E494655.68	34.18	T-50 RIGHT 1.0
2002	N635449.99	E495099.28	34.09	T-55 RIGHT 1.04
2003	N635481.63	E495111.6	35.34	T-55 LEFT 1.04
2000	N635330.11	E495286.48	36.56	T-60 LEFT 1.13
2001	N635277.84	E495303.77	38.68	T-60 RIGHT 1.13
2008	N635559.99	E495691.63	34.61	T-65 RIGHT 1.2
2009	N635564.74	E495653.74	36.64	T-65 LEFT 1.2
2010	N635876.68	E495455	38.40	T-70 LEFT 1.3
2011	N635879.89	E495503.03	37.01	T-70 RIGHT 1.3
3003	N636014.45	E495744.89	36.00	T-75 LEFT 1.4
3004	N636012.43	E495794.31	36.73	T-75 RIGHT 1.4
3000	N636307.24	E495816.42	39.88	T-80 LEFT 1.5
3001	N636314.46	E495855.85	38.37	T-80 RIGHT 1.5
3005	N636539.92	E496180.88	36.29	T-85 LEFT 1.6
3006	N636510.28	E496153.19	37.91	T-85 RIGHT 1.6
3007	N636314.1	E496467.4	37.27	T-90 LEFT 1.7
3008	N636348.78	E496426.82	38.17	T-90 RIGHT 1.7
3009	N636388.02	E496791.93	38.45	T-95 RIGHT 1.8
3010	N636422.19	E496762.76	39.06	T-95 LEFT 1.8
3011	N636281.14	E497247.38	40.26	T-100 RIGHT 1.9
3012	N636325.62	E497268.97	39.63	T-100 LEFT 1.9
2020	N636271.9788	E497617.5114	42.08	T-105 RIGHT 2.0
2021	N636313.5372	E497657.228	40.83	T-105 LEFT 2.0
2018	N636197.8579	E498074.7838	43.3	T-110 RIGHT 2.1
2019	N636257.9843	E498062.9213	42.71	T-110 LEFT 2.1

LOCATION MAP

USGS QUAD SHEET (PLAINFIELD, NJ)
SCALE: 1" = 2000'



NOTES:

1) LOCATION: MIDDLESEX COUNTY, NEW JERSEY.

2) INFORMATION SHOWN HEREON IS BASED ON A FIELD SURVEY COMPLETED BY PENNONI ASSOCIATES INC. BETWEEN THE DATES OF 11/02/2010 AND 11/29/2010.

3) IT IS THE RESPONSIBILITY OF ALL DESIGNERS & CONTRACTORS UTILIZING THIS PLAN & THE INFORMATION CONTAINED THEREON TO CALL THE NJ ONE-CALL SYSTEM AT 1-800-272-1000 FOR FIELD LOCATION OF UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.

4) VERTICAL DATUM AS SHOWN IS BASED ON NAVD 88
HORIZONTAL DATUM AS SHOWN IS BASED ON N.J.S.P.C.S. 83

5) 2007 HIGH RESOLUTION ORTHOIMAGERY OBTAINED FROM THE NEW JERSEY INFORMATION NETWORK.

6) BENCHMARKS:
PID – AG3916
STATE/COUNTY – NJ/MIDDLESEX
N 627919.1536
E 507094.2569
EL. 52.6556

PID – KV8524
STATE/COUNTY – NJ/SOMERSET
N 638020.8938
E 489855.4524
EL. 45.2160

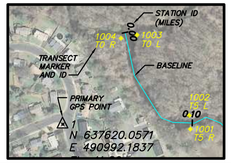
PID – KV8616
STATE/COUNTY – NJ/UNION
N 643035.2136
E 504679.7990
EL. 60.9889

PID – KV8805
STATE/COUNTY – NJ/MIDDLESEX
N 367936.5898
E 532417.3677
EL. 141.6507

PID – 6826
STATE/COUNTY – NJ/UNION
N 647594.0785
E 527302.7852
EL. 122.7982

KEY:

ALL LABELS TYPICAL



GRAPHIC SCALE

300 0 150 300 600 1200

(IN FEET)

Pennoni Associates Inc.
Consulting Engineers
NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28033300
515 Grove Street
Haddon Heights, N.J. 08035
TEL: 856 • 547 • 0505
FAX: 856 • 547 • 9174

DATE	NO.	REVISIONS	BY

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.

DENNIS S. DiBLASIO
PROFESSIONAL LAND SURVEYOR
NEW JERSEY LICENSE No. GS 02830700

LAND SURVEY (CDE-OU4Q-REQ 01)
OPERABLE UNIT 4 (BOUND BROOK)
MIDDLESEX COUNTY, NEW JERSEY

PLAN OF SURVEY

THE LOUIS BERGER GROUP, INC.
565 TAXTER ROAD, SUITE 510
ELMSFORD, NY 10523

JOB NO. LBGI 1001
SHEET 1 OF 4

SCALE 1" = 300'
DRAWN BY JFZ
DATE 12/01/2010
APPROVED

DRAWING NO. S0301

LBGI 1001

LOCATION MAP

USGS QUAD SHEET (PLAINFIELD, NJ)

SCALE: 1" = 2000'

NOTES:

1) LOCATION: MIDDLESEX COUNTY, NEW JERSEY

2) INFORMATION SHOWN HEREON IS BASED ON A FIELD SURVEY COMPLETED BY PENNONI ASSOCIATES INC. BETWEEN THE DATES OF 11/02/2010 AND 11/29/2010

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HORIZONTAL DATUM AS SHOWN IS BASED ON N.J.S.P.C.S. 83

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STATE/COUNTY – NJ/MIDDLESEX
N 827919.1536
E 507094.2569
EL 82.6556

PID – KV6524
STATE/COUNTY – NJ/SOMERSET
N 638020.8938
E 489855.4524
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STATE/COUNTY – NJ/UNION
N 643035.2136
E 504679.7990
EL. 60.9889

PID – KV6805
STATE/COUNTY – NJ/MIDDLESEX
N 367936.5898
E 532417.3677
EL. 141.6507

PID – 6826
STATE/COUNTY – NJ/UNION
N 647594.0785
E 527302.7852
EL. 122.7982

KEY:

ALL LABELS TYPICAL

TRANSECT COORDINATE TABLE:

PAI #	NORTHING	EASTING	ELEVATION	TRANSECT #
2015	N636445.5329	E498406.2566	45.98	T-115 RIGHT 2.2
2016	N636498.2312	E498426.4372	46.11	T-115 LEFT 2.2
2017	N636524.2946	E498929.8824	40.49	T-120 RIGHT 2.3
2023	N636570.5281	E498933.4746	40.95	T-120 LEFT 2.3
2024	N636420.7767	E499443.9721	41.85	T-125 RIGHT 2.4
2025	N636478.9304	E499477.4564	41.72	T-125 LEFT 2.4
2026	N636269.6508	E499894.7639	41.83	T-130 RIGHT 2.5
2027	N636310.7674	E499914.1254	42.2	T-130 LEFT 2.5
2028	N635900.7383	E500197.993	42.08	T-135 LEFT 2.55
2029	N635911.4772	E500151.7817	42.15	T-135 RIGHT 2.55
2030	N635736.0578	E500563.4291	43.97	T-140 RIGHT 2.65
2031	N635777.2702	E500600.1333	42.73	T-140 LEFT 2.65
2032	N635349.2578	E500845.77	43.29	T-145 RIGHT 2.7
2033	N635391.8995	E500896.4032	43.65	T- 145 LEFT 2.7
2034	N634978.2558	E501181.4695	44	T- 150 LEFT 2.8
2035	N634938.336	E501140.1339	42.92	T-150 RIGHT 2.8
2046	N634757.2753	E501580.0469	44.28	T- 155 LEFT 2.9
2047	N634703.9956	E501558.6435	46.22	T-155 RIGHT 2.9
2044	N634803.978	E502000.3002	45.52	T- 160 LEFT 3.0
2045	N634743.8503	E502048.2219	45.92	T-160 RIGHT 3.0
2042	N635028.8232	E502421.7199	44.98	T-165 RIGHT 3.1
2043	N635079.3584	E502403.9594	48.81	T- 165 LEFT 3.1
2040	N634902.2892	E502753.3576	50.77	T-170 RIGHT 3.2
2041	N634977.3607	E502742.7951	54.25	T- 170 LEFT 3.2
2049	N635038.3389	E503248.7452	45.78	T- 175 LEFT 3.3
2050	N634983.1847	E503264.5117	49.85	T-175 RIGHT 3.3

GRAPHIC SCALE

300 0 150 300 600 1200

(IN FEET)

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Consulting Engineers
NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28033300

Pennoni

DATE	NO.	REVISIONS	BY

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NEW JERSEY LICENSE No. GS 02830700

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OPERABLE UNIT 4 (BOUND BROOK)
MIDDLESEX COUNTY, NEW JERSEY

PLAN OF SURVEY

THE LOUIS BERGER GROUP, INC.
565 TAXTER ROAD, SUITE 510
ELMSFORD, NY 10523

JOB NO. LBGI 1001

SHEET 2 OF 4

SCALE: 1" = 300'

DRAWN BY: JFZ

DATE: 12/01/2010

APPROVED

DRAWING NO. S0302

LBGI 1001

LOCATION MAP

USGS QUAD SHEET (PLAINFIELD, NJ)
SCALE: 1" = 2000'

TRANSECT COORDINATE TABLE:

PAI #	NORTHING	EASTING	ELEVATION	TRANSECT #
2052	N635872.614	E507351.0252	53.12	T-220 RIGHT 4.2
2053	N635900.2788	E507308.1191	52.17	T-220 LEFT 4.2
2054	N636324.7643	E507114.3807	53.57	T-225 RIGHT 4.3
2055	N636292.8091	E507067.0386	54.18	T-225 LEFT 4.3
2056	N636731.784	E507321.4558	51.92	T-230 RIGHT 4.4
2057	N636777.7532	E507200.2018	52.14	T-230 LEFT 4.4
2058	N636758.2752	E507674.4885	52.1	T-235 LEFT 4.5
2059	N636737.3844	E507707.8794	52.61	T-235 RIGHT 4.5
2065	N636827.3506	E508036.6078	52.68	T-240 LEFT 4.55
2067	N636783.4743	E508034.8476	52.81	T-240 RIGHT 4.55
2064	N636830.2543	E508532.9391	52.23	T-245 LEFT 4.6
2066	N636783.6557	E508539.0764	53.6	T-245 RIGHT 4.6
2062	N636762.8748	E509023.9437	53.48	T-250 RIGHT 4.7
2063	N636803.911	E509026.3581	53.07	T-250 LEFT 4.7
2068	N636836.0596	E509487.5866	51.55	T-255 RIGHT 4.8
2069	N636879.8464	E509454.8533	53.32	T-255 LEFT 4.8
2070	N636994.4215	E509945.5435	53.32	T-260 RIGHT 4.9
2071	N637051.7891	E509945.7116	53.16	T-260 LEFT 4.9
2072	N637011.9799	E510385.1906	53.25	T-265 LEFT 5.0
2073	N636971.7677	E510395.7534	55.35	T-265 RIGHT 5.0
2074	N637018.6225	E510866.2964	52.72	T-270 RIGHT 5.1
2075	N637060.2058	E510861.0082	51.8	T-270 LEFT 5.1
2077	N637063.2511	E511352.7789	52.46	T-275 LEFT 5.2
2078	N637018.647	E511336.2386	56.82	T-275 RIGHT 5.2
2079	N636818.0998	E511759.321	53.62	T-280 LEFT 5.3
2080	N636778.0606	E511739.4959	54.23	T-280 RIGHT 5.3
2081	N636663.8062	E512204.7297	52.73	T-285 RIGHT 5.4
2082	N636702.0316	E512215.1641	53.94	T-285 LEFT 5.4
2083	N636536.9548	E512686.3556	54.01	T-290 RIGHT 5.5
2084	N636573.0897	E512695.4202	52.52	T-290 LEFT 5.5
2085	N636496.2699	E513181.2439	53.22	T-295 RIGHT 5.6
2086	N636541.7182	E513181.4914	54.24	T-295 LEFT 5.6
2087	N636496.8511	E513664.9779	54.03	T-300 RIGHT 5.7
2088	N636542.1297	E513666.8983	55.09	T-300 LEFT 5.7

NOTES:

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N 638020.8938
E 489855.4524
EL. 45.2160

PID – KV6616
STATE/COUNTY – NJ/UNION
N 643035.2136
E 504679.7990
EL. 60.9889

PID – KV6805
STATE/COUNTY – NJ/MIDDLESEX
N 357936.5898
E 532417.3677
EL. 141.6507

PID – 8826
STATE/COUNTY – NJ/UNION
N 647594.0785
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KEY:

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Consulting Engineers
NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28033300

Pennoni

DATE	NO.	REVISIONS	BY

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OPERABLE UNIT 4 (BOUND BROOK)
MIDDLESEX COUNTY, NEW JERSEY

PLAN OF SURVEY

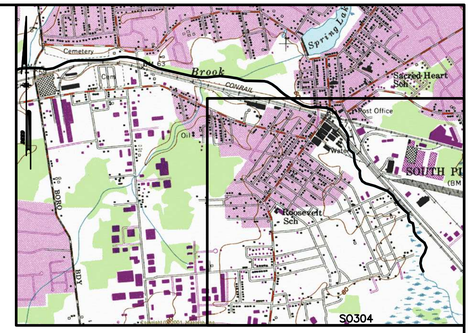
THE LOUIS BERGER GROUP, INC.
565 TAXTER ROAD, SUITE 510
ELMSFORD, NY 10523

JOB NO. LBGI 1001
SHEET 3 OF 4

SCALE 1" = 300'
DRAWN BY JFZ
DATE 12/01/2010
APPROVED

DRAWING NO. S0303

LBGI 1001



LOCATION MAP

USGS QUAD SHEET (PLAINFIELD, NJ)

SCALE: 1" = 2000'

NOTES:

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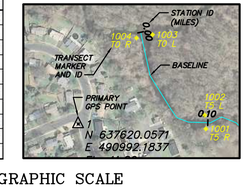
N 647594.0785
E 527302.7852
EL. 122.7982

TRANSECT COORDINATE TABLE:

PAI #	NORTHING	EASTING	ELEVATION	TRANSECT #
2102	N636542.2127	E514197.3163	53.66	T-305 LEFT 5.8
2103	N636509.6515	E514196.0652	53.65	T-305 RIGHT 5.8
2100	N636487.3545	E514561.2174	54.51	T-309 LEFT 5.9
2101	N636442.7486	E514559.2046	55.41	T-309 RIGHT 5.9
2098	N636430.9086	E514951.0814	55.47	T-314 LEFT 6.0
2099	N636406.4142	E514934.205	54.55	T-314 RIGHT 6.0
2096	N636143.3759	E515242.7333	54.24	T-318 LEFT 6.1
2097	N636116.8364	E515227.1053	56.01	T-318 RIGHT 6.1
2094	N635899.3402	E515646.9134	55.47	T-323 LEFT 6.2
2095	N635875.4692	E515628.4313	58.43	T-323 RIGHT 6.2
2092	N635695.5222	E516049.9048	54.24	T-328 RIGHT 6.25
2093	N635723.3406	E516057.1	56.29	T-328 LEFT 6.25
2090	N635728.7453	E516516.4804	58.44	T-333 LEFT 6.3
2091	N635703.0112	E516497.224	58.97	T-333 RIGHT 6.3
2105	N635356.0065	E516814.1018	60.02	T-338 RIGHT 6.4
2106	N635373.3786	E516843.055	59.36	T-338 LEFT 6.4
2107	N634919.6329	E516903.751	58.76	T-343 LEFT 6.5
2108	N634913.8027	E516884.944	59.55	T-343 RIGHT 6.5
2109	N634534.2433	E517155.8363	58.95	T-348 LEFT 6.6
2110	N634543.6636	E517137.0458	58.58	T-348 RIGHT 6.6
2111	N634101.3789	E517342.3866	61.34	T-353 LEFT 6.7
2112	N634091.3517	E517310.8395	62.32	T-353 RIGHT 6.7
2113	N633805.615	E517522.8487	61.92	T-358 LEFT 6.8
2114	N633772.6846	E517503.7892	62.95	T-358 RIGHT 6.8
2116	N633669.8929	E518007.072	62.06	T-363 LEFT 6.9
2117	N633642.0115	E517984.3564	61.69	T-363 RIGHT 6.9
2118	N633289.8308	E518342.7796	66.93	T-368 LEFT 7.0
2119	N633270.988	E518318.8587	64.45	T-368 RIGHT 7.0
2120	N632950.1561	E518545.1754	63.31	T-373 RIGHT 7.1
2121	N632943.757	E518606.7792	62.02	T-373 LEFT 7.1
2122	N632534.3091	E518761.3849	62.23	T-378 LEFT 7.2
2123	N632517.1056	E518728.7797	64.84	T-378 RIGHT 7.2
2124	N632141.835	E519038.4646	62.55	T-383 RIGHT 7.3
2125	N632158.8027	E519070.6322	63.84	T-383 LEFT 7.3
2126	N631735.4418	E518893.9944	66.42	T-388 RIGHT 7.4
2127	N631756.3083	E518936.1084	63.38	T-388 LEFT 7.4
2128	N631320.6768	E519089.4729	63.55	T-393 LEFT 7.5
2129	N631291.0108	E519067.7562	63.71	T-393 RIGHT 7.5
2131	N631060.0637	E519444.0986	64.2	T-398 LEFT 7.6
2132	N631033.9726	E519422.6024	64.56	T-398 RIGHT 7.6
2133	N630648.314	E519715.1253	64.29	T-403 RIGHT 7.7
2134	N630650.629	E519745.9529	63.78	T-403 LEFT 7.7

KEY:

ALL LABELS TYPICAL



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Consulting Engineers

NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28053300

Pennoni

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JOB NO.	LBGI 1001
SHEET	4 OF 4

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1" = 300'	S0304
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LBGI 1001